# The Chemical Age

**A Weekly Journal Devoted to Industrial and Engineering Chemistry**

VOL. XVII. No. 418 JULY 2, 1927 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

## Contents

| | PAGE |
|---|---|
| EDITORIAL NOTES: Coming Nitrogen Developments; Toxic Gases and the Boll Weevil; Colour Users and Dyestuffs | 1 |
| A Hexyl Resorcinol Patent Action | 3 |
| Colour Users' Annual Meeting | 4 |
| Book Reviews | 5 |
| A New 30-cwt. Commercial Motor Vehicle | 6 |
| Chemical Matters in Parliament; "C.A." Queries | 9 |
| From Week to Week | 10 |
| References to Current Literature | 11 |
| Patent Literature | 12 |
| Weekly Chemical Prices and Market Reports | 15 |
| Company News; Chemical Trade Inquiries, etc. | 20 |
| Commercial Intelligence; New Companies Registered | 22 |
| MONTHLY METALLURGICAL SECTION: "The Determination of Vanadium in Metallurgical Products," by W. Singleton; etc. | 1–8 |

*NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.*

*The prepaid subscription to* THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

*Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.*

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

## Coming Nitrogen Developments

SEVERAL points of more than usual interest, especially in relation to the development of the nitrogen fertiliser industry, were mentioned in the important statement submitted in evidence by Mr. F. C. O. Speyer (general manager of Nitram, Ltd., and of the Sulphate of Ammonia Federation) to the Royal Commission on Agriculture in India on Monday. The first is the announcement that with the advent of many new forms of fertiliser and the possibility of making them themselves, Nitram, Ltd., with the active support of Imperial Chemical Industries, has extended its research and advisory department, and, while continuing to look to research institutions for advice and information on research problems, has established a research station and experimental farm of its own at Wargrave, near Weybridge, on the Thames. The high character of this organisation is sufficiently indicated by the names of the staff. Sir Frederick Keeble, formerly of Oxford, is the chief director, with Mr. T. H. J. Carroll as assistant. The chief chemist and head of the research laboratory is Mr. H. J. Page (formerly chief chemist at the Rothamsted Experimental Station), with a staff of chemists and analysts investigating soil, plant, and fertiliser problems. Mr. S. J. Watson is the animal nutrition chemist and Mr. G. E. Blackman the agricultural botanist. The intelligence department is in charge of Dr. E. H. Tripp and a trained staff. Other officers are in charge of the experimental farm, publicity, and advisory services. It is clear, therefore, that the research problem is to be handled with great thoroughness, and on the largest scale. Although located in England, the function of the new research department will be to promote and undertake research experiment and trial in the use of fertilisers throughout the Empire and in other parts of the world. The home staff will be available for the investigation of all problems in connection with fertilisers, both at home and abroad. At present the expenditure on agricultural research and propaganda is upwards of £100,000 per annum.

Turning to the special position of India, Mr. Speyer made the equally important announcement that if the demand for artificial fertilisers there should develop beyond the limit of importable supplies, Imperial Chemical Industries are prepared to consider the erection of atmospheric nitrogen works in India. As far back as 1921 the need of increasing the supply of home-produced nitrogen in India was recognised. Since then nitrogen prices in the world have fallen by about 50 per cent., and the present view is that the Indian demand for artificial forms of nitrogen can be most cheaply met by imports of suitable forms. At the moment, the fertiliser trade is being revolutionised by the production of high-testing forms of nitrogen and by the synthesis of compound fertilisers such as di-ammonium-phosphate and di-ammonium-phosphate-potash, which contain up to 70 per cent. of plant food, instead of the 15 per cent. to 20 per cent. compounds hitherto available. The conclusion reached by Synthetic Ammonia and Nitrates, Ltd., is that under present conditions the production of atmospheric nitrogen in India would not be economic. At the present prices, which may still further decline, only very large-scale units, with a minimum capacity of about 150,000 tons of pure nitrogen a year, can be expected to pay even under the most favourable conditions in Great Britain and Europe. Conditions in India are far less favourable from the economic point of view. At the same time, it must be recognised that, as more exact knowledge of the application of artificial fertilisers in tropical conditions becomes available, an enormous demand may be created. These possibilities are clearly being kept in view.

A third matter, among several others dealt with by Mr. Speyer, may be selected for mention. This was the proposal for the establishment of a Central Fertiliser Office in India. Nitram has already developed a widespread selling and propaganda organisation there. For this purpose trained native advisers are essential, and to provide an adequate number Nitram has set up its own centre at Tollygunge. To cope with the enormous work that is opening out, it

is now suggested that the Government should establish a Central Fertiliser Office on which should be represented the Central Government Agricultural Department, the Provincial Agricultural Departments, Nitram, Ltd., and possibly other fertiliser interests. Imperial Chemical Industries have sanctioned a contribution on a £1 for £1 basis until their total expenditure on propaganda in India reaches £50,000 per annum, provided that similar sums are forthcoming from other sources. Owing to its friendly relations with continental groups of makers of fertilisers, Nitram is in a position to sell a number of new fertilisers which its own producers are not yet but will shortly be making. It seems clear from Mr. Speyer's evidence that this co-operative attitude with other fertiliser interests will continue to be possible under the proposed central office.

## Toxic Gas and the Boll Weevil

In his desire to establish his claim that the chief aim of toxic gases is not the destruction of human life, but the beneficent service of mankind and industry, General Amos Fries, the head of the U.S.A. Chemical Warfare Service, has been conducting for some time a vigorous gas attack on the boll weevil as the arch-enemy of the cotton plant. So far the engagement is inconclusive—honours may be described as about even; but some highly interesting results and experiences have already been obtained.

Altogether, a total force of 150,000 boll weevils was collected from various infected areas in the United States, and kept in cold storage to be brought into action when needed. On the other side the chemical staff of the Edgwood Arsenal, the headquarters of the Chemical Warfare Service, assembled more than 1,000 possible poisons and poisonous mixtures to be concentrated on the insect at every point thought to be vulnerable. Calcium arsenate was used as a general standard. Sixty-two compounds were found which equalled or surpassed calcium arsenate in deadliness. Twenty-two of these caused little or no injury to the cotton plant. Only five, however, promised commercial possibilities—namely, sodium fluosilicate, barium fluosilicate, a specially prepared calcium arsenate, barium fluoride, and cryolite. Forty of the compounds proved definitely harmful to the cotton.

After all this work, it is disappointing to learn that "no substance was found which definitely attracted or repelled the boll weevil, or which irritated it sufficiently to make it fly." It merely looked on and refused to budge. It was thought, the report artfully states, that if calcium arsenate could be made more pleasing to the palate, the weevil might absorb more of the poison, and accordingly tempting preparations of various essential oils were used to disguise the bait. Still the weevil remained uninterested. While there were some indications that small amounts of aniline and one or two other substances added to calcium arsenate were more effective than the calcium arsenate alone, no really conclusive results were obtained. "When," the official report states, "the most powerful known irritants to man were tried against the weevil in the hope that they might make it fly, they caused practically no signs of irritation or excitement. While some few other substances less irritating to man seemed to increase the weevil's activity under the conditions of test, in no case was the increased activity sufficient to be considered of economic importance. None of the substances tested was successful in making the weevil fly."

In the experiments with volatile toxic gases, again, the results were mainly negative. The weevil seemed to stand concentrations of gas entirely out of line with the known poisonous effect of the gas used. It was found that the boll weevil could be killed by a relatively small concentration of poisonous gas on longer exposures. In the field, however, it would be impossible to maintain low concentrations of volatile gas for long periods of time, and the investigators have little hope of poisoning the boll weevil by the use of volatile gases as ordinarily applied.

The experiments are being continued by the chemical staff at Edgwood Arsenal, who are not discouraged by the results so far obtained, and who believe that ultimately some method of defeating the cotton pest will be discovered.

## Colour Users and Dyestuffs

Mr. Sutcliffe Smith's explanation at the Colour Users' annual meeting of the much larger sum spent on dyestuffs in this country as compared with pre-war expenditure is that it is due not to any increased cost of the same types of dyestuffs but to the much more general use of higher grade dyes. The colour bill of this country to-day he estimates at £5,000,000 as compared with £2,000,000 in 1913. This is probably to be accounted for largely by the public demand for fast-dyed materials and the consequent increased use of vat colours. Unlike other observers, Mr. Sutcliffe Smith has no fears that such large collective organisations as Imperial Chemical Industries will result in damage to the consumer or that the latter will not benefit from the economies and efficiencies that must result from large scale production. So long as industry is controlled by men of ability and integrity, there is, in his view, no ground for fear of "monopolist dangers." As is stated in the annual report, however, the Colour Users' Association is by no means indifferent to the possible effect of the amalgamation of dye manufacturing concerns on the position in this country as regards the Dyestuffs Act. This rather seems to point to the hope on the users' part that the existing restrictions may not be required as long as was at first contemplated, and that increasing efficiency of production, coupled probably with international understandings, may gradually provide adequate safeguards for the industry. That, of course, has always been the ultimate hope, but security in the meantime must not be prematurely risked.

## The Calendar

| | | |
|---|---|---|
| July 4–8 | Society of Chemical Industry: Annual General Meeting. | Edinburgh. |
| July 18–23 | Advertising Convention and Exhibition. | Olympia, London. |
| Aug. 31–Sep. 7 | British Association for the Advancement of Science: Annual Meeting. | Leeds. |

# A Hexyl Resorcinol Patent Action

## Sharpe and Dohme v. Boots

A PATENT action of exceptional interest to chemists, relating to Patent No. 219,922 (" Improvements in or relating to the manufacture of alkyl resorcinols "), is now proceeding before Mr. Justice Astbury in the Chancery Division of the High Court. The hearing began on Tuesday, June 21, and up to the time of going to press on Thursday, only two witnesses had been examined—Mr. Horatio Ballantyne and Sir William Pope. The plaintiffs are Sharpe and Dohme, Inc., and the defendants Boots Pure Drug Co., Ltd. Counsel for the plaintiffs are Sir Arthur Colefax, K.C., and Mr. R. Stafford Cripps, K.C. (instructed by Ravenscroft Woodward and Co.), and for the defendants, Mr. J. Whitehead, K.C., and Mr. Kenneth Swann (instructed by Seaton, Taylor and Co.).

### The Question in Dispute

The plaintiffs are the patentees and owners of Patent No. 219,922 with the Convention date, July 31, 1923, in respect of " Improvements in or relating to the manufacture of alkyl resorcinols." The patent is too long to quote, but claim 1 is for " the method of making alkyl resorcinols containing more than 2 carbon atoms in the alkyl group (except *n*-propyl and *n*-butyl) which comprises heating together resorcinol, a fatty acid containing more than two carbon atoms (excepting propionic and *n*-butyric acid) and a condensing agent such as zinc chloride until reaction takes place, and subjecting the resulting intermediate ketone to the action of a reducing agent such as zinc amalgam and hydrochloric acid." Subsequent claims seek to protect the purification of the intermediate ketone or acyl resorcinol, the preparation of alkyl resorcinols (as aforementioned) from appropriate acyl resorcinols by reduction with reducing agents such as zinc amalgam and hydrochloric acid and the purification and the vacuum distillation of the alkyl resorcinols. There are also claimed the substances prepared by these methods and in particular isobutyl, *n*-amyl, *iso*-amyl and *n*-hexyl resorcinol. The body of the specification states that the alkyl resorcinols have been found to have a therapeutic value, being non-toxic and antiseptic, with a high phenol coefficient. The bodies whose preparation is specifically described are those claimed and their phenol coefficients (R.W.) are described and claimed as 18, 21, 22, and 50 respectively.

The plaintiffs seek an injunction and the usual reliefs against the defendants, alleging that the defendants have infringed their patent by importing into and/or by the manufacture, sale, offering for sale, supply and use in this country of new alkyl resorcinols made according to and of the chemical composition and constitution described in the patent and claimed therein. In particular they complain of an offer for sale of a substance entitled " Hexyl Resorcinol Boots " and of the sale of a quantity of that substance. The defendants deny infringement and allege that the patent is invalid on the ground of prior publication.

### The Plaintiffs' Case

Sir Arthur Colefax in his opening speech proceeded to familiarise his lordship with the chemistry of the various reactions and the nomenclature of the various substances mentioned not only in the plaintiffs' specification but also in the considerable mass of scientific papers and prior specifications cited against it, and further dealt exhaustively with the cited literature. There were papers, he said, from scientific journals as well as patent specifications dealing with the preparation of the lower ketophenols and those dealing with the preparation from the lower ketophenols of alkyl phenols. In particular, there were papers published in the eighties of last century by Nencki and his collaborators showing the preparation of a number of the lower alkyl ketophenols and alkyl aryl ketones by condensing the appropriate phenols or aromatic hydrocarbons with the appropriate fatty acids, using zinc chloride as condensing agent, and three later papers, by Clemmensen, 1913–14, showing the preparation of alkyl phenols or alkyl hydrocarbons by the reduction with zinc amalgam and hydrochloric acid of the appropriate ketobodies. There was also a paper by Johnson and Lane in *J. Amer. Chem. Soc.* (1921), pp. 348–360. Sir Arthur contended that the mosaic of earlier documents would not avail the defendants and that, so far as the Johnson and Lane paper was concerned, Sir James Dewar's well-known dictum that there was no prevision in chemistry might well be cited. There was no such thing as a " general reaction " in chemistry. The mere fact that these authors had purported to make the discoveries they had described in relation to the lower alkyl resorcinols, did not justify any chemist in saying that the same methods would serve for the preparation of the higher alkyl resorcinols, or that those bodies when prepared would have analogous or even enhanced disinfectant properties. He contended that the further study required to elucidate the facts stated in the plaintiffs' specification constituted the requisite invention to justify a valid patent.

### Mr. Ballantyne's Evidence

Mr. Horatio Ballantyne, the first witness for the plaintiffs, stated that the product purchased from the defendants consisted of *n*-hexyl resorcinol dissolved in olive oil and enclosed in a gelatine capsule. It was similar to a sample he had prepared according to the patentees' directions which had subsequently been dissolved in olive oil and extracted therefrom. It had a higher melting point than that specified in the patent, and he concluded that the extraction from olive oil had resulted in a further purification.

The witness was then taken through all the cited documents and stated that in no case did he find anything bearing on the plaintiffs' specification. He stated that chemists did not recognise any reaction as generally applicable; if he had ascertained that a body were neutralised by caustic soda he could say with surety that it would be neutralised by caustic potash, but apart from reactions of that nature research and experiment were necessary to ascertain whether a reaction which gave results with certain substances would or would not give similar results with other substances.

Mr. Whitehead's cross-examination of Mr. Ballantyne, which lasted throughout Monday, Tuesday, Wednesday, and Thursday of this week, was intended mainly to show that chemists recognise the applicability in homologous series of generally applicable reactions.

### Sir William Pope a Witness

On Thursday, on the termination of Mr. Ballantyne's evidence, Sir William Pope was called for the plaintiffs, and was under examination-in-chief by Sir A. Colefax when the Court rose. His evidence was in support of the novelty of the process covered by the patent.

Several well-known chemists were present in the Court, including Dr. M. O. Forster, now on a visit from India to this country.

---

## Scientific Research in Colonies

IN pursuance of the recommendations of the Colonial Office Conference the Secretary of State for the Colonies has appointed a committee to formulate practical proposals, for submission to the Colonial Governments, to give effect to the resolution of the Colonial Office Conference on the subject of Colonial agricultural scientific and research services. " These proposals should," state the terms of the memorandum, "include a scheme, based on contributions to a common pool, for the creation of a Colonial agricultural scientific and research service available for the requirements of the whole Colonial Empire, for the support of institutions needed for that purpose, and for the increase of research and study facilities in connection with the specialist agricultural services of the Colonies generally." The committee includes Professor Sir J. B. Farmer (Imperial College of Science and Technology), Dr. A. W. Hill (director of Royal Botanic Gardens, Kew), and Mr. F. L. Engledow (School of Agriculture, Cambridge).

---

## Merchandise Marks: Exemption of Uncompounded Drugs

THE Board of Trade have exempted uncompounded drugs, from whatever source derived, which are sold for medicinal purposes, from the requirements that imported goods bearing a British name or trade mark must also bear an indication of origin. The exemption does not apply, however, if the drugs are sold or exposed for sale under a proprietary name.

# Colour Users' Annual Meeting

## Mr. Sutcliffe Smith's Speech

THE feature of the annual meeting of the Colour Users' Association in Manchester on Tuesday was the review of the present position by the Chairman (Mr. Sutcliffe Smith).

Praising the progress of the British dyestuffs industry and rejoicing that 80 per cent. of the colour used in this country is of British manufacture, whereas before the war 80 per cent. was of foreign manufacture, he lamented, nevertheless, the fact that it was still necessary to license the import of nearly 1,900 tons of colour, valued at £944,000. Moreover, whereas now this value represented only 20 per cent. of the colour used in this country, the pre-war 80 per cent. of the consumption was valued at only £1,800,000. From this he drew two deductions: (1) That the general level of dyeware prices, not only in this country but throughout the world, was considerably higher than pre-war; and (2) that the type of colour now used was of a much better quality, with a consequently higher price.

There had been, he suggested, a marked increase in the use of vat and other high-class dyes on account of their fastness to washing and light. It was estimated that whereas in 1913 the colour bill of this country was approximately £2,000,000, to-day, with a reduced output, it must be not less than £5,000,000. The textile trade to-day was giving a much higher standard in dyeing and finishing than was the case before the war. The Joint Technical Committee, whose activities formed the next subject of Mr. Sutcliffe Smith's address, could not, he maintained, function efficiently or adequately without executive powers.

### Effect of Amalgamations

Referring to the amalgamation of chemical interests he discussed the consumer's point of view. "There is a fear," he said—"a real one, expressed to me by many users—that by the elimination of selling competition the users might be exploited not only nationally but internationally. Will the resultant savings in administration and overhead expenses, from the pooling of technical knowledge, the scrapping of inefficient plant, and the economies of better buying power in the purchase of raw materials and stores, be passed on to the consumers as well as to those engaged in the industry? So long as we have industry controlled by men of ability and integrity, as we have in the large-scale industries in this country to-day, I do not think there is any ground to fear monopolistic dangers. This is particularly so in the chemical industry, for there is nothing in the world's supply of raw materials to give a world monopoly to any country."

It will perhaps be most profitable to quote next his remarks on the proposed amalgamation with the Interessen Gemeinschaft which has received attention recently in the Press:—

"In 1924 your Association took an active part in the opposition to the agreement proposed then between the British Dyestuffs Corporation, Ltd., and the Interessen Gemeinschaft. As users, we affirmed two main principles:—

(*a*) The colour users must be assured of free access to the best quality and range of dyestuffs produced anywhere; and

(*b*) Users must be on as favourable terms as regards prices as any of their world competitors, and these prices should not be on such a basis as to retard the sale of their productions in overseas markets.

"I am of the opinion, and I believe I voice the sentiments of the principal users of this country, that an agreement on sound lines, safeguarding our two main principles, and whereby there would be a proper interchange of technical and manufacturing knowledge, would not be disadvantageous to British users and the world generally; but there must be no risk of a partnership arrangement in which the British manufacturer would not be on an equal footing with the Interessen Gemeinschaft and by which the British industry would not be progressive. Users would welcome, if the time is opportune, an authoritative statement by the Imperial Chemical Industries, Ltd., on the present position. . . . In the event of an international amalgamation the British user would expect the suspension of the Dyestuffs (Import) Regulation Act and the supersession of the present cumbrous licensing system by free access to the world for his dyestuffs. The time is ripe for such an arrangement, now that the British industry, with its united front, is in a position to meet the German manufacturers on an equal footing."

### The Price Factor

Expressing satisfaction with the resolution of the Dyestuffs Advisory Licensing Committee to apply the principle of the two times factor as from September 1 next, Mr. Sutcliffe Smith said this should place the British dyemaking industry in a much stronger competing position to obtain new business immediately. Also, as progressive reductions take place in the factor during the remaining period of the Dyestuffs (Import) Regulation Act, the dyemaking industry should be in a position, at the expiration of that period, to meet world competition without artificial assistance.

The general level of prices, not only in this country, but on the Continent and in America, Mr. Sutcliffe Smith thought, was considerably higher than it should be, and he hoped for an early reduction as the result of amalgamation. In many instances, he suggested, exaggerated statements had been made as to the cost of dyewares, reflected in the ultimate selling price per yard of cloth. Sufficient emphasis was not always laid on the auxiliary products used in the textile industry. The price of chemicals was a very important item in the cost of production in the colour-using industries, particularly the textile trade. Not only did these affect chemicals directly used, but they had a material bearing indirectly, in that they were component parts of the cost of dyestuffs. It was satisfactory to find that in many instances the price of chemicals, as related to the prices ruling in 1914, compared favourably, and were approximately on a level with the Wholesale Prices Commodity trade figure. It was to be regretted, however, that there were yet far too many chemicals used in large quantities, the prices of which were much too high.

---

## New British Standard Paint Specifications

THE British Engineering Standards Association has just issued eight new British Standard Specifications for Blanc Fixe (No. 281), Lead Chromes (282), Prussian Blue (283), Carbon Black (284), Bone Black (285), Vegetable Black (286), Lamp Black (287) and Mineral Black (288). They contain clauses regulating the composition, together with standard reception tests, for the purchase of these materials together with appendices giving methods of carrying out the tests. These specifications have been prepared at the request of the paint manufacturers by a committee representative of both the buying and manufacturing interests, and, as in the case of all British Standard specifications, they will be reviewed as experience of their working or progress in the industry renders it necessary, and revised issues will be published from time to time. Copies of these eight new specifications (Nos. 281/288) can be obtained from the B.E.S.A. Publications Department, 28, Victoria Street, London, S.W.1, price 2s. 2d. each, post free. Amongst the specifications that have already been issued are those for Ready Mixed Linseed Oil Paint (Oil Gloss) Zinc Oxide (No. 277) and Ready Mixed Linseed Oil Paint (Oil Gloss) Tinted Paints (Zinc Oxide Base) (No. 278).

---

## Honour for Well known Chemical Engineer

IN consideration of the important contributions to the metallurgical and chemical industries made by Mr. J. V. N. Dorr, president of the Dorr Co., Rutgers University has conferred upon him the degree of Doctor of Science. After early association with Mr. Thomas A. Edison, Dr. Dorr gained experience as a metallurgical chemist. He later entered into a partnership and personally undertook the reconstruction of a previously unprofitable gold milling operation which became widely known through his originating a new method of classification, the advantages of which were immediately recognised in this and other industries. Dr. Dorr was next responsible for the introduction of an apparatus by means of which the process of settling was made continuous. As an outcome, counter current washing was made continuous and has been adopted not only in the metallurgical industry, but also in many chemical industries where solids are washed free from solutions. These principles of operation have now set a standard throughout the world. Dr. Dorr has been responsible also for the development of apparatus used in handling finely divided solids in liquid, a subject of which he has made a long study. Dr. Dorr is now on a visit to Europe.

# Reviews

LEHRBUCH DER ENZYME. Von Professor Carl Oppenheimer, unter Mitarbeit von Dr. Richard Kuhn. Leipzig: Georg Thieme. Pp. 660.

It was a happy idea of the author to publish this condensed—it can scarcely even yet be called short—account of the enzymes, following the lines adopted in his comprehensive treatise on the subject which was completed only last year. So rapid is the progress of the subject that several sections have had to be rewritten for the smaller book, which has thus been brought, for the moment, up-to-date.

The reader will find in this work an admirable account of the enzymes from every point of view. Special attention is paid to the physical chemistry of the subject, in the section on which the author has had the advantage of the collaboration of Dr. Richard Kuhn. A highly interesting chapter is that on the part played by enzymes in the economy of the organism, in which the interplay of the various enzymes involved in the proper functioning of a living organism is described in a vivid and attractive manner. So great has been the progress in many departments of enzyme chemistry in recent years that the connected presentation of the subject in a book like this, in which excess of detail is avoided, is of the greatest value. It will enable many, who have not been able closely to follow the very voluminous literature as it has appeared from time to time, to bring their knowledge up to date and to realise what a remarkable change has been effected in many aspects of the subject.

The book is supplied with a good index. References are only given to important papers which have appeared during the last two years; for others, recourse must be had to the larger treatise. A. HARDEN.

---

INDUSTRIAL STOICHOMETRY. By Lewis and Radasch. London: McGraw Hill Publishing Co., Ltd. Pp. 174. 12s. 6d.

The book shows how by the utilisation of the conservation of matter, energy, etc., and the chemical laws of combining weights, valuable information may be obtained on industrial problems. The results may give information which may be difficult to obtain by direct measurements, or they may provide a quantitative view of what is taking place in a process or part of a process.

Another use to which information acquired in this way can be applied is in the design of the chemical plant, for every quantitative check which can be applied minimises the likelihood of errors.

In this book all these aspects are dealt with and their importance illustrated by worked examples. The second and third chapters deal with fuel and gas producer problems, while in the next two chapters problems relating to sulphur, lime and cement burning are discussed on a quantitative basis. Calculations relating to the air and fuel supply for a tunnel kiln employed on a specified problem, and how these change with variation in conditions, as well as their bearing on the design of the kiln, are discussed in the sixth chapter, whilst calculations relating to metallurgical furnaces constitute the seventh chapter.

The latter part of the book shows how information derived in the laboratory may be utilised in designing works plant, and contains worked problems on absorption, solvent recovery and the like.

The authors have successfully selected a number of typical examples, which they have worked out in detail, so that guidance may be obtained either by the chemist or the designer in the solution of similar problems with which he may be faced.

---

ANNUAL REPORTS OF THE SOCIETY OF CHEMICAL INDUSTRY ON THE PROGRESS OF APPLIED CHEMISTRY. 1926. Volume XI. Edited by T. F. Burton. London: Society of Chemical Industry. Pp. 724. 12s. 6d. (7s. 6d. to members of the Society).

It is hardly necessary to say that no chemical bookshelf worthy of the name is complete without this volume. In the compass of 724 pages it contains articles on every aspect of applied chemistry, numbering in all twenty-five, by contributors who are specialists on their subjects. The sectional headings are as follow: "General, Plant and Machinery," by S. G. M. Ure; "Fuel," by H. J. Hodsman; "Gas, Destructive Distillation, Tar Products," by J. G. King and R. A. A. Taylor; "Mineral Oils," by A. E. Dunstan; "Colouring Matters and Dyes," by C. Hollins; "Fibres, Textiles, Cellulose, and Paper," by D. J. Norman; "Bleaching, Dyeing, Printing, and Finishing," by A. J. Hall; "Acids, Alkalis, Salts, etc.," by P. Parrish and F. C. Snelling; "Glass," by A. Cousen; "Refractories, Ceramics, and Cements," by A. T. Green; "Iron and Steel," by C. O. Bannister; "Non-Ferrous Metals," by H. F. Richards; "Electro-Chemical and Electro-Metallurgical Industries," by A. G. Lobley; "Oils, Fats, and Waxes," by H. M. Langton; "Paints, Pigments, Varnishes, and Resins," by members of the Oil and Colour Chemists' Association; "Indiarubber," by R. W. Lunn; "Leather and Glue," by D. Woodroffe; "Soils and Fertilisers," by H. J. Page; "Sugars, Starches, and Gums," by L. Eynon and J. A. Lane; "The Fermentation Industries," by H. Lloyd Hind; "Foods," by F. S. Aumonier; "Sanitation and Water Purification," by J. Haworth; "Fine Chemicals, Medicinal Substances, and Essential Oils," by W. H. Gray and H. Paget; "Photographic Materials and Processes," by W. Clark; and "Explosives, 1925-26," by J. Weir. The volume is well indexed. The Society of Chemical Industry is performing a very important public service by the publication of this series of volumes.

---

THE ATOM. By Professor E. N. da C. Andrade, D.Sc., Ph.D. Benn's Sixpenny Library, No. 103. London: Ernest Benn. Pp. 78. 6d.

The unfortunate and unfounded popular superstition that anybody can write good popular works on scientific subjects has resulted, in the last few years, in a flood of books in which unsound ideas go hand-in-hand with stodgy phraseology. It is therefore refreshing to find a book on an important subject written by a man who combines a first-hand experimental knowledge of what he is talking about (obtained by doing research on it himself) with a real gift for exposition.

In order to drive home a large body of facts in the compass of such a small volume as the one now before us, an author must make as much use as possible of homely similes and striking analogies; he must use the simplest possible language consistent with the greatest possible accuracy. The measure of Professor Andrade's success is best indicated by some examples. "The atomic theory," he says, "is to chemistry what bookkeeping and accountancy are to business. We might carry on somehow without it, but we should have no control of our knowledge, no systematic record of our achievements to which we could refer, no reasoned lines for planning future campaigns." The manner in which scientific workers may draw sound conclusions from apparently remote evidence, in connection with the fact that the Brownian movement is regarded as caused by collision of invisible molecules with visible colloidal particles, is supported by a striking analogy in which it is pointed out that a man in an aeroplane, looking down on the sea without being able to observe the motion of the surface, could deduce the nature of the latter motion from the movement of a ship riding the sea. Chemists and physicists and laymen alike will relish the remark made about Perrin's work on the Brownian movement: "It is astonishing to think that the molecule was virtually weighed by looking through a microscope at a very small drop of slightly dirty water."

For those to whom the subject matter is new the treatment is at once sound and interesting; while even those familiar with recent work on the structure of the atom will be attracted by the author's fresh and entertaining style.

---

CHEMICAL SYNONYMS AND TRADE NAMES. By W. Gardner. Third Edition. London: Crosby Lockwood and Son. Pp. 355. 30s.

This valuable work has, as compared with the second edition, been much enlarged, and now contains approximately twenty thousand definitions and cross-references (as compared with the previous seventeen thousand). A slight inconvenience in the earlier edition, namely, the fact that it contained an appendix of 55 pages of additional chemical synonyms and trade names, has now been removed by rearranging the matter so that in the present volume the arrangement is perfectly continuous. By this time this publication has established itself so firmly that its obvious merits need no further stressing.

# A New 30 Cwt. Commercial Motor Vehicle

## Some Features of Hadfield's New Enterprise

THE decision of Hadfields, Ltd., of Sheffield, the well-known steel manufacturers, to enter the automobile industry is notable, not only for their world-wide reputation as producers of high grade steel, and for the excellence of their research and technical services, but because the new enterprise will have all the advantages of their great commercial organisation. It is still more notable because it is not a hasty post-war adventure but a policy deliberately determined on in times when national trade is exposed to many difficulties. Complete confidence in the fundamental soundness of the policy is the only explanation, and this confidence appears already to be in process of justification.

It has been known for some time that Hadfields, Ltd., had acquired an interest in Bean Cars, Ltd., but it was only at a kind of inaugural ceremony that took place at the Tipton works, Staffordshire, last week, in the presence of a very representative assembly from all parts of the country, that the position and policy were fully disclosed.

### The New 30 Cwt. Commercial

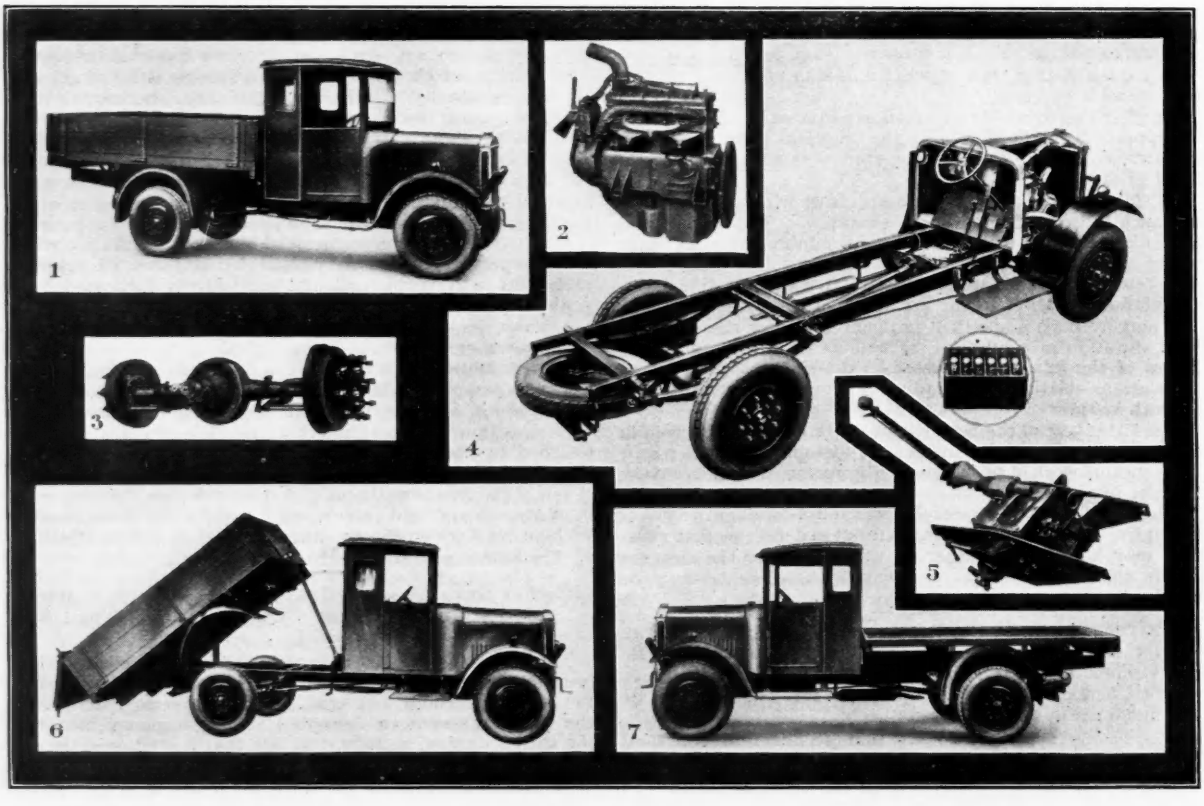
The special purpose of the visit was to inspect a new model —" the new Bean 30 cwt. commercial " as it is called—that the company have just completed, but advantage was taken in addition to show visitors over both the extensive old works and the new works buildings now in progress. The extensions have been made necessary by increased production.

Up to now the Bean Co. have had three works—body building and finishing shops at Dudley, mechanical engineering shops at Tipton, and the forge and stamping works at Smethwick in the Birmingham area. The works at Dudley have been sold and larger and better equipped shops are being erected at Tipton alongside the engineering works. Thus the whole cars will now be assembled at Tipton, the Smethwick works continuing to deal with raw material. The transfer from Dudley to Tipton will be complete by the middle of August. The reorganisation of Bean Cars, Ltd., is now practically complete and the company is under the sole control of Hadfields, Ltd.

The various operations involved in the production of a car were all on view, and particular attention was attracted by the foundry, where the special Hadfield processes of hardening were witnessed, and the research laboratory, where the microphotographical and analytical processes indicated the close contact the firm has always maintained between science and practice.

Although the Bean cars have long been known for their wearing and travelling qualities, it is just over 2½ years since the company first marketed a commercial vehicle, and the original 20-25 cwt. model has remained in continuous production since. In view of the growth of commercial road transport, however, the company decided on the new 30 cwt. model, of which illustrations are given below. Various improvements in design have been introduced, and a special point is made of the economical petrol and oil consumption and the consequent low running costs. With an unladen weight of under two tons the " 30 cwt. commercial " falls within the £26 annual tax category, so that in practice it costs no more to run than the average " tonner." As its rated load capacity is 30 cwt. this represents a 33⅓ per cent. saving in ton-mile operating costs. A complete range of standard bodies is listed.

### Types and Details of the New 30-cwt. Commercial Lorry




1. NEW LORRY WITH DROP SIDES AND TAILBOARD. 2. ENGINE. 3. REAR AXLE, FULLY FLOATING. 4. CHASSIS. 5. GEAR BOX. 6. TIPPER TYPE. 7. FLAT TYPE.

### Sir Robert Hadfield's Speech

Sir Robert Hadfield, presiding at the luncheon, outlined the policy of the company, and expert testimony to the excellence of the new vehicle was given by several well-known authorities, such as Mr. Kerr Thomas, Major Clarke, Mr. Egerton Banks, and Major Maude.

The trader, Sir Robert said, did not want a heavy lorry of three or four tons, but a van, heavier than one ton, capable of going comparatively long distances with speed, safety, and economy, while carrying large loads, had not been very well catered for. That was one of the reasons why they had introduced the new 30 cwt. commercial vehicle. Road transport for comparatively light loads was becoming so popular that there was a serious possibility that the roads would become congested by commercial vehicles. That danger was being averted to some extent by big manufacturers in the Midlands who sent out their lorries during the night. But that practice was only good for long journeys; obviously it was useless for the lorry to arrive at its destination during the night. It seemed inevitable that before long special roads must be built for the use of commercial motor traffic only. In a few years' time, such a step would be absolutely necessary. At present the experiment might be tried on one of our most used trunk routes such as London to the Midlands, where the "commercial road," after taking the straightest course from London, could branch off on to the existing Midland roads leading to the big towns. It would be an interesting experiment.

The additions to the new works which were rapidly nearing completion, would enable the company to carry out under one roof what had hitherto been done in two factories some distance apart. That meant a substantial reduction in overhead charges which would result in their being able to give the public and the trade better value. The annual capacity of their plant and buildings would be increased to more than 10,000 motor cars and commercial vehicles.

### "Buy British" and Advertise

Sales, he was glad to state, were increasing and salesmen reported that the great majority of present buyers were largely influenced by their desire to "Buy British." That was very satisfactory. It showed that our prestige as manufacturers still stood high; that the Royal Family, our statesmen, our newspapers, and organisations like the British Industries Fair had not laboured in vain in spreading the gospel of "Buy British." It also showed the value of the patriotic appeal through the medium of Press advertising. Manufacturers who had stressed that appeal in their own Press advertisements and had subscribed to the co-operative advertising campaign for British cars had invested their money wisely. It was important, if they were to break the foreign car habit speedily, that they must set out to attract attention overseas by vigorous advertising and by convincing demonstrations. They meant to tackle the overseas markets with both commercial and private vehicles, and he was sure they would find favour there. The Bean had already been proved in Australia where, three years ago, a standard touring model crossed the continent, portions of which had never been traversed before. His firm had purchased the control of Bean Cars, Ltd., because they believed that—quite apart from the fact that Hadfields had made the steel for the various component parts—the car itself had a great future. Bean cars, whether of the pleasure or commercial type, could be recommended with confidence, believing, as his firm did, that the public would realise that Hadfields would not and could not be associated with any production but those of the latest design, highest workmanship, and best materials. (Applause.)

## Exemption of Chemicals from Safeguarding Act

THE Board of Trade give notice that the Treasury, by order dated June 23, have exempted under the provisions of Section 10 (5) of the Finance Act, 1926, for the period from June 27, 1927, to March 6, 1928, the following articles from the duty imposed by Section 1 of the Safeguarding of Industries Act, 1921, as amended by the Finance Act, 1926:—

Ammonium perchlorate; Dial (acid diallyl barbituric); Elbon (cinnamoyl para oxyphenyl urea); Hydroquinone; Integrators (planimeter type); R Lead acetate; Lipoiodin; Phytin; Planimeters; Potassium guaiacol sulphonate (thiocol); Urea (carbamide).

## Arsenic in American Tobacco

### Some Surprising Figures

IN a paper entitled "A Hitherto Unsuspected Source of Arsenic in the Human Environment," by R. E. Remington, published in the June number of the *Journal of the American Chemical Society*, attention is called to the presence of arsenic in American tobacco. The writer of the article points out that within the last year or two the British Ministry of Health has fixed one-hundredth of a grain of arsenic (as trioxide) per lb. as the amount permissible in American apples, while the North Dakota Food Commission as long ago as 1913 set up one part of arsenic per million as the maximum permitted in baking powder. Numerous brands of American manufactured tobacco, in the form of pipe tobacco, cigars, cigarettes and chewing tobacco have been examined, and "arsenic has been found to be invariably present in quantities many times greater than the amounts cited as being permitted in foods."

Figures given indicate that a number of pipe smoking and plug chewing tobaccos contained the equivalent of from 0·05 to 0·27 grains of arsenic trioxide per lb. (*i.e.*, 5 to 27 hundredth-grains). Special experiments were devised to determine the fate of the arsenic when the tobacco was smoked or chewed, and it was found that approximately half of the arsenic in pipe tobacco was evolved in the smoke, while about half that in plug tobacco was soluble in water. Data covering cigars and cigarettes are not presented at the moment, "although several of these have been examined and the results found to be comparable with those given." For comparison, there is given a table of the amounts of arsenic in various vegetable and food substances, which are in general many times less than those now found in tobacco. "Amounts of arsenic reported are much in excess of the maximum permitted by [American] State and Federal authorities in foods, and of amounts normally present in plants and animals." The author of the paper concludes that "while these results point clearly to the possibility of a considerable part of the arsenic in tobacco finding its way into the body, it is not felt that they are fully conclusive. Absolute proof must include examination of the blood and urine of users and non-users on as nearly as may be identical diet, as well as of organs and tissues of the bodies of persons whose history as regards the use of tobacco is known. This work is now under way. Neither is it felt that the data here presented justify us in drawing any conclusion as to the possibility of chronic arsenical poisoning from the use of tobacco, although such a possibility is not to be dismissed without more evidence."

For purposes of reference, it may be noted that the Royal Commission on Arsenical Poisoning, 1903, recommended that penalties should be imposed under the Sale of Foods and Drugs Acts upon vendors of any liquids entering into the composition of food which contained one-hundredth grain or more of arsenic per gallon; or of solid foods containing one-hundredth grain or more of arsenic per lb. Last year, in a paper read before the Society of Public Analysts (see THE CHEMICAL AGE, October 16, 1926, p. 369), Mr. A. Chaston Chapman, F.R.S., stated that marine crustaceans and shellfish had been found to contain from 10 to 174 parts of arsenic (as arsenic trioxide) per million of the wet edible portions, native oysters containing from 5 to 10 and Portuguese oysters from 33 to 70 parts per million. The figures given above for the arsenic in American tobaccos correspond to about 6 to 29 parts of arsenic per million.

## National Physical Laboratory: Annual Inspection

ON Friday, June 24, the annual inspection of the National Physical Laboratory by the General Board took place, a very large number of visitors being present. The visitors were received by Sir Ernest Rutherford, P.R.S., Sir Richard Glazebrook, F.R.S., and Sir J. E. Petavel, F.R.S. (director of the Laboratory). The exhibits of chemical interest were shown in the chemistry division of the department of metallurgy, and included methods and plant for the production of beryllium from minerals; bursting tests on fabrics; the calibration of Redwood viscometers; and British standardised samples of steel and cast iron. In addition, a number of the exhibits in the metallurgical section had considerable chemical interest. This was especially so of an exhibit of a new apparatus for the production of beryllium by the method of filament deposition. This apparatus is described in detail in the metallurgical supplement to the present issue.

## Lead Poisoning Act Regulations

### Commissioners' Inquiry into Objections

UNDER the Lead Paint (Protection Against Poisoning) Act, 1926, the Home Secretary was empowered to make regulations for preventing danger from lead paint to persons employed in or in connection with the painting of buildings. Draft regulations were issued in the early part of the year and a considerable degree of agreement was arrived at between the Home Office and the various organised bodies in the building and decorating trades. There were, however, objections from certain other quarters, and accordingly a public inquiry was ordered. Sir William Mackenzie, K.C., was appointed the commissioner for this purpose, and he held the public inquiry at the Central Hall, Westminster, London, on Wednesday and Thursday, June 22 and 23. At the inquiry the attitude taken by the employers and employees in the painting and decorating trades generally was that the regulations should be made as strict as possible, and this point of view was supported by the white lead manufacturers. The regulations, however, affected others besides those permanently engaged in painting and decorating, and thus it was that the main objections to the regulations as drafted came from the engineering and shipbuilding trades and railways.

This opposition fell under two heads, and related to the exemption from the regulations of certain classes of work, and also the exemption of certain classes of workers. With regard to the former it was stated in evidence that in dealing with the repainting of railway structural steel work such as station roofs and bridges the only method for removing the rust was by chipping and scraping dry, and it was claimed that although lead paint was used for these structures no other practical method had yet been devised for removing the rust which formed upon them. As Clause 3 of the regulations stands, however, the railway companies or others similarly situated would be prevented from scraping or rubbing down these structures in this manner, and exemption was therefore claimed. In the same way the manufacturers of structural iron and steel work claimed exemption on similar grounds.

During the proceedings the Home Office representatives showed an inclination to meet these objections, recognising certain difficulties, and it was decided to carry out tests upon samples of the mixture of rust and paint chipped off railway station roofs, and similar structural iron and steel work. With regard to the proposal to exempt certain classes of workers from the regulations, this came particularly from engineering firms who employ odd labourers to carry out painting work for maintenance purposes, and also from structural steel work manufacturers and erectors whose erecting staffs carry out the painting of the girders under conditions very dissimilar from those under which the ordinary painter and decorator works. The Home Office again showed an inclination to meet the objectors. On no account, however, would the Home Office agree to any exemption from the regulations affecting dry rubbing down processes in which sandpaper or other methods were applied which would create lead dust. The Commissioner will report in due course.

## The Second Fleet St. Tour

THE second of the tours arranged by THE CHEMICAL AGE for its readers took place on Wednesday. Under the guidance of Mr. Allen S. Walker, a large party visited various places associated more particularly with Dr. Johnson. The first visit made was to the Church of St. Clement Dane's, in the Strand, where the Doctor attended, and which has a window depicting him and his friend, Oliver Goldsmith. The party then passed on to Prince Henry's room at No. 17, Fleet Street. Finally a visit was made to Dr. Johnson's house in Gough Square. The party included Dr. Thomas H. Norton, scientific and technical editor of the American journal *Chemicals*, who is at present staying in this country, and Mr. T. B. Price, chemistry master at the Grammar School, Dartford. The next tour will take place on Tuesday, July 5, and will comprise St. Bride's Church, Fleet Street (the printers' church), "Bridewell Place" remains, the River Fleet, and also the *Daily Mail* or *Daily Telegraph* offices. Readers of THE CHEMICAL AGE who desire to attend on this or subsequent occasions can be accommodated if application is made as soon as possible.

## Meeting of Liquid Air, Ltd.

THE annual general meeting of Liquid Air, Ltd., was held on Friday, June 24, at Stadium Works, Wembley, Mr. O. Simonis (chairman and managing director) presiding. In moving the adoption of the report and accounts, he said that they had been working very hard, had done a substantially bigger trade, and had largely increased the number of their accounts. A careful analysis, however, had now shown that the direct, and still more the indirect, influences of the coal strike upset their calculations. The additional capital which they obtained four or five months ago enabled them to acquire the new works and to equip them. Their relations with their competitors might be said to be unaltered, except that the various unnecessary lawsuits had ended. The right kind of competition in modern industry was the greatest incentive to development, progress, and invention, and was thus a constructive element. It became destructive only when competition misconstrued turned into war. That had been increasingly recognised by more and more industries in recent years. The fact that the British oxygen industry consisted of only two firms did not alter the economic principle, and sooner or later the two firms would have to be on speaking terms. That this was not yet the case was no fault of any member of their board. Their new home should make a very big difference to them. The works, when they were finished, would be second to none. Their new patent, which he referred to last year, and which covered what they now termed the pressure plant, was fulfilling their expectations. Several of those plants were now running, and those which covered oxygen contracts were showing a much better profit than cylindered oxygen. He saw no cause to be disheartened through having to pass a dividend this year, a policy which, under all the circumstances, must be considered sound. When reorganisation had been completed, considerable savings in waste charges would have been effected.

The chairman having replied to questions, the report and accounts were unanimously agreed to.

## Mr. A. C. Fieldner's Promotion

MR. A. C. FIELDNER, superintendent of the Pittsburgh experiment station of the United States Bureau of Mines, Department of Commerce, has been appointed to the position of Chief Engineer to the experiment stations division of the Bureau. In his new position, Mr. Fieldner will correlate the scientific activities of the Bureau's experiment stations where problems dealing with the elimination of waste in the different mineral industries are being studied. Mr. Fieldner has done notable work in connection with the utilisation of coal, coke, petroleum, and other fuels. During the war he was in charge of gas mask research in the Chemical Warfare Service. Methods developed by him for testing the efficiency of gas masks and absorbents were adopted by laboratories in several of the Allied countries. The professional degree of chemical engineer was conferred on him in 1923 by Ohio State University in recognition of his work in organising and directing the exhaustive research work of the Bureau of Mines, in co-operation with the New York and New Jersey Tunnel Commission, on the combustion of automotive exhaust gases and the minimum safe concentration of carbon monoxide in tunnel atmospheres. In 1924 Mr. Fieldner visited many European laboratories and industrial concerns to study the carbonisation and processing of coal, and safety in mines research. He has twice been chairman of the chemical committee of the American Gas Association, and is a member of the managing committee of the Technical Section of this organisation. He has served as chairman of the Gas and Fuel Section of the American Chemical Society and is a member of the Executive Committee, and is also a member of the Committee on Coal and Coke of the American Institute of Mining and Metallurgical Engineers.

## A Simple Steam Trap

A SIMPLE steam trap in which moving parts are reduced to one freely floating ball is made by the Key Engineering Co., Ltd. The action is dependent upon the ball floating in condensate entering the trap. When the water level is higher than the discharge orifice it seals it and when the level falls the orifice is sealed by the ball being forced against it by unbalanced steam pressure.

### Institute of Chemistry Pass List

THE Institute of Chemistry has just issued its pass list for the April-May examinations. The following passed the examination for the Associateship in general chemistry :—Brown, G., Heriot-Watt College, Edinburgh ; Freeland, D. M., Chelsea Polytechnic ; Harding, G., Royal Technical College, Salford, and College of Technology, Manchester ; Keeley, E. C., B.Sc., King's College, London ; Lawrence, C. D., B.Sc., trained under S. R. Illingworth, D.Sc., F.I.C., at the School of Mines, Treforest ; Lucke, D. T., B.Sc., Sir John Cass Technical Institute, London ; Nattrass, E. F., B.Sc., University College, London, and East London College ; Thompson, A. W., Sir John Cass Technical Institute, London ; Tompsett, S. L., B.Sc., King's College, London, and Northern Polytechnic, London. The following passed the examination for the Fellowship : in branch A, inorganic chemistry, section II, metallurgy—Blyth, H. N., B.A., and Sandilands, J. ; in branch D, agricultural chemistry—Ling, E. R., B.Sc., A.R.C.S. ; in branch E, the chemistry (including microscopy) of food and drugs, and of water—Childs, H., B.Sc. ; Chilvers, C., B.Sc. ; Crosbie-Oates, R., B.Sc. ; Hornby, F. P., B.Sc. ; Houghton, A. S., M.Sc. ; Mann, T. ; Monk, H. E., B.Sc. ; Sherratt, J. G., B.Sc. Tech. ; Sutton, R. W., B.Sc. Tech. ; Watridge, R. W., B.Sc. ; in branch F, biochemistry, with special reference to chemical pathology—Hocking, F. D. M., M.B., B.S., M.R.C.S., L.R.C.P., A.C.G.F.C. ; in branch G, industrial chemistry, with a special reference to coal tar and ammonia—Eadie, R. G. Watt, B.Sc. ; in a special examination in the chemistry of foods, with special reference to milk and milk products—Bogod, M., A.R.C.S. ; in a special examination in oils and fats —Rhys-Davies, W.

### Dyestuffs Industry in Great Britain

IN an article in the special textile marketing number of the *Manchester Guardian Commercial* Dr. E. F. Armstrong writes : —" Hitherto the dyestuff industry has been struggling on its own, though in friendly association with the heavy chemical industry—a fact which undoubtedly placed it at a disadvantage in relation to the Continental and American competition ; the inclusion, therefore, of the British Dyestuffs Corporation in Imperial Chemical Industries starts a new chapter in its history. The strength of the great merger company in all directions is beyond question ; the inspired leadership of its chairman, Sir Alfred Mond, and of its president and vice-chairman, Sir Harry McGowan, and of the many able lieutenants whom they have gathered round them, is a factor for success which cannot be measured in words. It will be obvious to all," he continues, " how beneficial must be the pooling of the accumulated knowledge of all the highly qualified and experienced men in the many companies concerned, and what important results are to be expected from a co-ordinated policy of chemical research on the vast scale which is now possible. This is bound to result in an acceleration of the progress of the British dye industry."

There is also a contribution on cotton finishing processes, by Dr. D. Clibbens.

### A Nobel Explosives' Jubilee

To celebrate the jubilee of the Westquarter (Stirlingshire) factory of Nobel's Explosives Co., Ltd., 700 members of the staff and their friends were entertained recently by the company. At a luncheon to the directors, heads of departments and long-service employees, Mr. George A. Ashcroft, the manager, gave an address, in which he outlined the progress of the firm. He pointed out that when the factory was opened there were only 50 employees. To-day there were 530 workers. Twenty-one years ago the output of the detonator department was in the region of 40 millions annually, while to-day it amounted to about 100 millions. In those days it was very hard to reach an output of 40 millions, while now, with the improvement in the tube shops, that department could with almost 60 per cent. of the workers almost double the annual output of the days when he first came to the factory. Mr. Ashcroft also referred to the fact that among those present was Miss Jessie MacGregor, the oldest employée, who had completed fifty years' service with the firm.

## Chemical Matters in Parliament

### Fuel Research

In answer to a question by Mr. G. Hardie (House of Commons, June 23), the Duchess of Atholl stated that no entirely new process of coal treatment had been developed at the Fuel Research Station to the point of commercial application. The general policy (subject to considerations of public interest) was to place the results of Government research at the disposal of all responsible persons or firms in this country engaged in the industry or industries concerned. The method of attaining this end, including the question of charge, might vary in different cases, but in the case of many improvements to processes of coal treatment now worked on the large scale by gas undertakings in this country which had been suggested as the result of work at the Fuel Research Station, the results had been made generally available without charge. The general object of most fuel research as well as other research undertaken by the Department of Scientific and Industrial Research, was not so much to develop commercial processes as to provide fundamental data on which commercial processes could be developed by private enterprise.

Mr. Hardie further asked whether the Duchess of Atholl denied that data obtained by investigation in that Department was not of commercial value, and upon being requested by the Speaker to put the question on paper, stated he had done so but had not been answered.

### Beet Sugar Subsidies

The amount of subsidy paid to the English Beet Sugar Corporation, Ltd., in respect of the operation of the Cantley factory, stated Mr. Guinness in answer to a question by Mr. Thurtle (House of Commons, June 28), was in 1925–26, £360,872 13s. 10d. ; in 1926–27, £505,251 1s. 5d. ; and in respect of the Kelham factory, which is the property of Home Grown Sugar, Ltd., but worked by the English Beet Sugar Corporation in the joint interest : 1925–26, £103,537 ; 1926–27, £270,127 11s. 4d. Approximately one-third of these sums was recovered by the State in the form of Excise Duty.

In reply to a further question, Mr. Guinness said that in view of the difficulties which certain companies had in raising money, He did not think that any lower terms would have attained the object.

## "C.A." Queries

***We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published ; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries :—***

62 (*Commudine for Commutators*).—" We should esteem it a favour if you could furnish us with the present address of Bayleys Electric Fluid Co., who used to be in Banbury Street, Birmingham, as we have an order for some commudine for electrical commutators, of which they are the makers."

### A Greater Demand for Chilean Nitrate Predicted

LARGE exports of Chilean nitrate at lower prices are expected for the last half of this year, according to a statement made recently by Mr. W. Arthur Murphy, a member of the Chilean Nitrate Producers' Association. The Chilean Government and the producers, he states, united in an effort to offset last year's declines in nitrate sales. Abrogation of the 25-year old agreement limiting the amount of nitrate exported from Chile will permit the delivery of large quantities at reduced prices, and the unlimited export of nitrate will be permitted after July 1. Sales for delivery after that date already amount to 500,000 tons, which is considered an encouraging indication of the importers' confidence in the market. The Chilean Government announced last month that the Prudhomme and Guggenheim processes have substantially cut the cost of nitrate production. These factors, together with the reports from Germany that synthetic nitrate has soured the soil, and reduced the yield in the last five years, have, continues Mr. Murphy, " again emphasised the superiority of natural Chilean nitrate, and without doubt world consumption, and in particular that of the United States, will respond accordingly.

# From Week to Week

THE MAGADI SODA CO. announce that from July 1 the registered office of the company is Broadway Buildings, 50–64, Broadway, London, S.W.1.

DR. C. A. KERR has resigned his post as assistant in the chemical department of University College, Dundee, on his appointment to a Commonwealth Fellowship.

P. AND B. EVAPORATORS, LTD., of 75, Victoria Street, Westminster, have changed their address to St. Stephen's House, Victoria Embankment, Westminster, S.W.1, telephone number, Victoria 3044.

MR. GEOFFREY LE M. MANDER, of Mander Brothers, paint manufacturers, Wolverhampton, has been adopted by the East Wolverhampton Liberal Council as prospective Parliamentary candidate, Mr. G. R. Thorne, M.P., having decided not to stand at the next General Election.

RECENT WILLS INCLUDE Mr. Martin Luther Finch, of Plymouth, managing director of James Gibbs and Finch, Ltd., chemical manufacturers, £36,968 (net personalty £5,573).—Mr. Adolphus Swaine, of Huddersfield, principal of W. P. England and Co., drysalters and chemical merchants, £14,001.

A MASSIVE CHIMNEY one hundred and twenty feet high was riven from top to bottom by an explosion on Wednesday at the Homerton, London, factory of Lewis Berger and Sons, Ltd., paint manufacturers, and the stack is in danger of collapsing. Two men were injured by boiling varnish.

WE ARE INFORMED BY Vickers, Limited, that Mr. F. Dudley Docker, C.B., the Rt. Hon. R. McKenna, and Sir William Plender, Bart., G.B.E., have notified the board of the company that in their opinion the time has arrived when they can properly relinquish their position as advisers to the board, which position they were invited to occupy at the request of the board and with the approval of the shareholders, at the time of the reconstruction of the company.

FORTY WAYS OF LIFTING and shifting heavy objects are described in the new catalogue of Herbert Morris, Ltd., gear and pulley specialists, of Loughborough. The apparatus illustrated ranges from simple differential pulley-blocks to large travelling trolleys designed for handling large crates, metal castings, and similar objects. A feature of interest is the Morris portable jib-crane, a machine of many uses and of minimum weight consistent with strength.

THE FOLLOWING MONOGRAPHS (theses for the Ph.D. degree of various American universities) have been received: "A Study of the Valence of Nitrogen in Quaternary Ammonium Compounds," by F. D. Hager; "A Crystalline Gamma Diazo Ester of the Camphor Series," by F. E. Kendall; "The Synthesis of Homochaulmoogric Acid, Homohydnocarpic Acid and Chaulmoogrylamines. VI," by J. Sacks; and "Magnetic Moments of the Alkali Metal Atoms," by J. B. Taylor.

THE INDUSTRIAL SCIENTIFIC ASSOCIATION, LTD., of 8, Bream's Buildings, E.C.4, has been formed for the purpose of acting as a centre of scientific information. The organisation comprises a central staff engaged in the collection and recording of information which may be of value in the advancement of industrial knowledge and technique, together with specialists engaged in the preparation of bulletins of information for particular firms and industries. The I.S.A. supplies to subscribers bulletins of information regarding their own industries and special reports on special subjects when required. Literature searches are also undertaken.

THE RAILWAY AND CANAL COMMISSION, on Monday, sanctioned the amalgamation of Amalgamated Collieries, Ltd., of the United Anthracite Collieries, and eight subsidiary companies. In giving the judgment of the Commission Mr. Justice Sankey said there was a great field opened by the amalgamation for research and experiment. It could hardly be doubted that the use and consumption of coal in this country was productive of great loss and great waste. An amalgamation of this character would enable research to be made for the best way of working the great national asset which the country was fortunate in possessing. Such research and such experiments could not be carried on by merely individual concerns, and must be the result of the larger and stronger unit.

THE BRITISH DRUG HOUSES, LTD., have issued a second impression of their booklet, "Clinical Pathology and the Use of Stains," being notes compiled by the director of a pathological laboratory to meet the requirements of those who wish to perform the common laboratory tests in general practice. It is hoped that they may be of use to those who have not the time to extract the various formulæ from the text-books. The value of these tests is such that there is a growing belief that they should be more frequently employed, especially as, given the necessary stains and reagents, many essential tests can be performed quickly and easily with very little apparatus. The booklet contains notes on bacteriology, hæmatology, histological methods, clinical significance of the results, equipment, and formulæ for the production of various stains. Lists are also given of the standard stains (dry and dissolved), and other requisites for this work supplied by B.D.H.

DR. G. HARKER, recently lecturer in applied organic chemistry in the Sydney University, has entered into partnership with Dr. F. H. Campbell, consulting chemist, of Melbourne.

JOHN POYNTER, SON AND MACDONALDS, state that since June 27, their head office has been situated at 189, St. Vincent Street, Glasgow, C.2; telephone numbers Central 2370-2371. Telegrams, "Poynter" Glasgow.

MAJOR A. RHYDDERCH, B.Sc., a member of the Institute of British Foundrymen and of the British Cast Iron Research Association's sub-committee on foundry sands, has arrived in Australia to join the staff of Hadfields (Australia).

SIR JOHN CARGILL, chairman of the Burmah Oil Co., Ltd., has received from Lord Irwin, Viceroy of India, a letter of appreciation of the gift of £100,000 which the company has made to the Rangoon University for the erection of a College of Mining and Engineering.

A PARTY OF MEMBERS of the Bristol and South-Western Counties Section of the Institute of Chemistry recently visited the works of the Avon Rubber Co. The party was shown round the extensive works by Mr. Lane, Mr. J. F. Reid, F.I.C., and Mr. M. Littlejohn, A.I.C., who explained the various processes.

A VERDICT OF "Accidental death, due to cancer caused by tar," was returned by a jury at Manchester on Wednesday at an inquest on William Henry Worsley, aged 53, an employee at the Bradford Road Gasworks. The coroner said that the victims of the disease probably wiped their tar-covered hands on their trousers, and this, soaking through, set up irritation.

THE ONE HUNDREDTH MEETING of the Society of Glass Technology was held in Sheffield on Wednesday, June 1[illegible] president, Mr. Walter Butterworth, sen., M.A., in the [illegible] Sir W. H. Hadow, C.B.E., D.Mus., LL.D., Vice-Chancellor o[illegible] University of Sheffield, was present and congratulated the Soci[illegible] reaching its one hundredth meeting. A paper entitled, "Gaseous Fuels for Furnace Heating," was presented by Mr. R. Wigginton, B.Sc.

AN INFORMAL PRIVATE CONFERENCE of fuel technologists from France, Germany, and Great Britain, was held at York Mansions, Westminster, on Monday, to discuss a basis of international co-operation towards a furtherance and solution of the larger problems in fuel technology which are common to all fuel-consuming countries. Those attending the conference were Professor W. A. Bone, Dr. Harold G. Colman, Dr. Franz Fischer, General Georges Patart, Mr. Harald Neilsen, Dr. Rosin, M. Henri Winkler, with Dr. Stanley Baker, as secretary. A basis for co-operative action was reached.

AT THE FIRST ANNUAL MEETING of the Western Viscose Silk Mills, Ltd., Bristol, on June 24, it was stated that the directors had first erected an experimental plant, a complete installation in miniature, in order to secure economical production. In this way it had been possible to work out the various chemical and engineering problems connected with artificial [illegible] in hundredweights instead of tons. The first seven of the [illegible] twenty-eight machines comprising the plant which were now running were started by the Lord Mayor of Bristol last December.

SIR ALFRED MOND had the degree of [illegible] conferred upon him at a graduation ceremony held at St. Andrews [illegible] Tuesday. Presenting Sir Alfred Mond, Professor Blyth Webster, Dean, Faculty of Arts, said that the distinguished example of his father, a man of art and science, had been followed by Sir Alfred, whose unusual combination of scientific and legal training had been brought to bear upon an even wider range of national affairs. He was chairman of the new Imperial Chemical Industries, the largest joint venture of science and commerce in our history, and the precursor of movements not only chemical, but national and imperial in aspect.

APPLICATIONS ARE INVITED for the following appointments:—Research Chemists at the Building Research Station, Garston, Herts; the Fuel Research Station, East Greenwich; the Chemical Research Laboratory, Teddington; and [illegible]cal stations of the Physical and Chemical Survey of the National Coal Resources. The Secretary, Department of Scientific and Industrial Research, 16, Old Queen Street, London, S.W.1. July 11.—An Assistant Government Chemist for the Sudan Government, £480. The Controller, Sudan Government, London Offices, Wellington House, Buckingham Gate, S.W.1. July 14.—A Glass Blower in the Egyptian University, Cairo. £411. The Director, Egyptian Educational Office, 39, Victoria Street, Westminster, London, S.W.1. July 14.

NEGOTIATIONS FOR THE ESTABLISHMENT OF AN ARTIFICIAL SILK factory are proceeding between the Tasmanian Government and Signors Vittorio Allamel and Silvio Tanfani, who represent an influential group of Italian manufacturers and financiers. The cost of the factory is estimated at £100,000 and that of the plant at about £350,000, the total capital required being in the neighbourhood of £700,000. About 2,000 operatives will be employed if the scheme is put into practice. Of the raw material a considerable portion is available in Tasmania, but wood pulp would have to be imported. The promoters have undertaken that in the event of Tasmanian woods providing suitable pulp in sufficient quantities it will be used in the manufacture of artificial silk. The estimated production of the factory is such that the whole production should be readily absorbed in Australia.

# References to Current Literature

## British

ANALYSIS.—A short method for the determination of butter fat. G. D. Elsdon and P. Smith. *Analyst*, June, pp. 317–324.

The determination of illipé butter in chocolate. H. W. Bywaters, F. T. Maggs, and C. J. Pool. *Analyst*, June, pp. 324–329.

The analysis of isopropyl alcohol. W. H. Simmons. *Perf. and Essent. Oil Rec.*, May, pp. 168–169.

The determination of free mercury in commercial products. H. B. Dunnicliff and K. Lal. *Analyst*, June, pp. 329–332.

GENERAL.—The supposed law of flame speeds. W. A. Bone. *Nature*, June 25, pp. 992–923.

Fuel for internal combustion engines. Sir F. L. Nathan. *J.S.C.I.*, June 17, pp. 211–220T.

INORGANIC.—"Active" nitrogen. E. J. B. Willey. *Nature*, June 25, pp. 924–925.

ORGANIC.—The action of nitric acid on acetylene and ethylene. P. V. McKie. *J. Chem. Soc.*, May, pp. 962–965.

Jackson and White's synthesis of phenanthrene. J. Kenner and J. Wilson. *J. Chem. Soc.*, May, pp. 1,108–1,112.

The acidic character of the acetoxylides and its influence on the course of their substitution. H. E. Dadswell and J. Kenner. *J. Chem. Soc.*, May, pp. 1,102–1,108.

*n*-Butyl-*m*-4-xylidine and its 6-nitro-derivative. J. Reilly and B. O'Neill. *J.S.C.I.*, June 17, pp. 226–228T.

## United States

ANALYSIS.—Manganese interference in the *o*-tolidene test for available chlorine. E. S. Hopkins. *Ind. Eng. Chem.*, June 1, pp. 744–746.

The determination of arsenic pentoxide as magnesium ammonium arsenate. W. M. McNabb. *J. Amer. Chem. Soc.*, June, pp. 1,451–1,453.

The determination of ferrous iron in silicates. L. A. Sarver. *J. Amer. Chem. Soc.*, June, pp. 1,472–1,477.

CATALYSIS.—The catalytic activity of lead. F. A. Madenwald, C. O. Henke, and O. W. Brown. *J. Phys. Chem.*, June, pp. 865–866.

The chain reaction theory of negative catalysis. H. L. J. Bäckström. *J. Amer. Chem. Soc.*, June, pp. 1,460–1,472.

The activity of various metal and metal oxide catalysts in promoting slow oxidation of methane by air. W. P. Yant and C. O. Hawk. *J. Amer. Chem. Soc.*, June, pp. 1,454–1,460.

COLLOIDS.—Hydration of gelatin in solution. M. Kunitz. *J. General Physiol.*, May 20, pp. 811–836.

GENERAL.—The detergent action of soaps. P. H. Fall. *J. Phys. Chem.*, June, pp. 801–849.

A hitherto unsuspected source of arsenic in the human environment. R. E. Remington. *J. Amer. Chem. Soc.*, June, pp. 1,410–1,416.

Sulphur in coal and coke. W. A. Selvig and A. C. Fieldner. *Ind. Eng. Chem.*, June 1, pp. 729–733.

Economic development of sulphuric acid industry. T. P. Kreps. *Chem. Met. Eng.*, June, 361–363.

Oxy-acetylene welding in chemical plant construction. G. O. Carter and W. B. Miller. *Ind. Eng. Chem.*, June 1, pp. 695–697.

OILS.—The oil from Port Orford cedar wood. F. H. Thurber and L. J. Roll. *Ind. Eng. Chem.*, June 1, pp. 739–742.

ORGANIC.—New derivatives of vanillin and some of their reactions. L. C. Raiford and G. C. Hillman. *J. Amer. Chem. Soc.*, June, pp. 1,571–1,577.

The synthesis and study of certain new derivatives of phenacetin. M. T. Bogert and W. H. Taylor. *J. Amer. Chem. Soc.*, June, pp. 1,578–1,583.

## German

ANALYSIS.—Gravimetric determination of magnesium, zinc, aluminium, and copper. L. Hahn and E. Hartleb. *Z. anal. Chem.*, Vol. 71 (7), pp. 225–235.

Argentometric chloride and iodide titration with adsorption indicators. III. J. M. Kolthoff. *Z. anal. Chem.*, Vol. 71 (7), pp. 235–243.

COLLOIDS.—The structure of metal oxide gels. M. Biltz. *Z. physik. Chem.*, May, pp. 356–368.

The peptisation of iron and chromium hydroxides in the presence of arsenic acid and other substances. M. R. Mehrotra and K. C. Sen. *Kolloid.-Z.*, May, pp. 35–43.

GENERAL.—The nature of the phenomena attending the drying and rehydration of some precipitates of extensive surface. O. Hahn and M. Biltz. *Z. Physik. Chem.*, May, pp. 323–355.

The existence of hexa-atomic iodine in solutions of iodine in carbon disulphide and carbon tetrachloride. J. Gróh and J. Szelestey. *Z. anorg. u. allg. Chem.*, June 14, pp. 333–344.

The absorption of sulphur dioxide in organic liquids. G. Weissenberger and H. Hadwiger. *Z. angew. Chem.*, June 23, pp. 734–736.

INORGANIC.—Some reactions of activated magnesium. A. P. Terentiew. *Z. anorg. u. allg. Chem.*, June 14, pp. 349–352.

Contribution to the knowledge of oxides. Antimony oxides. III. A. Simon and E. Thaler. *Z. anorg. u. allg. Chem.*, June 14, pp. 253–278.

On the formation of ammonia from its elements in the Siemens tube. E. Warburg. *Osterreichische Chem.-Zeit.*, June 1, pp. 101–102.

ORGANIC.—The mechanism of the formation of diphenyl from benzene. G. Pyl. *Berichte*, May 11, pp. 1,133–1,134.

A convenient synthesis of terphenyl. J. von Braun. *Berichte*, May 11, pp. 1,180–1,181.

α-Imino- and α-amino-acids from amines and carbonyl derivatives. A. Skita and C. Wulff. *Annalen*, June 8, pp. 17–40.

Polymerised formaldehyde, a model of cellulose. H. Staudinger, H. Johner, and R. Signer. *Z. physik. Chem.*, May, pp. 425–428.

PHYSICAL.—Vapour pressures and specific gravity of aqueous hydrocyanic acid. G. Bredig and M. Shirado. *Z. Elektrochem.*, June, pp. 209–211.

## Miscellaneous

ANALYSIS.—The qualitative investigation and determination of cyanates. Application to potassium cyanate. J. Leboucq. *J. Pharm. et Chim.*, June 1, pp. 531–539.

The polarimetric determination of tartaric acid by formation of tartar emetic by means of an automonious salt. H. Besson. *J. Pharm. et Chim.*, June 1, p. 544.

DYESTUFFS.—The rôle of some physical factors in the electrocapillary penetration of colloidal colours. W. Kopaczewski and W. Szukiewicz. *Comptes Rend*, June 13, pp. 1,443–1,445.

GENERAL.—Note on the preparation of liquid nickel carbonyl. C. F. van Duin. *Rec. Trav. Chim. Pays-Bas*, June 15, pp. 381–382.

The preparation of phosgene from chloropicrin. A colour-reaction of the latter. S. Secareano. *Bull. Soc. Chim.*, May, pp. 630–631.

The action of soap in silk degumming. T. Takahashi. *J. Soc. Chem. Ind. Jap.*, May, pp. 204–205B (in English).

OILS, ETC.—The separation of liquid and solid fatty acids by Twitchell's method. A. Steger and H. W. Scheffers. *Rec. Trav. Chim. Pays-Bas*, June 15, pp. 402–408.

Iodination of unsaturated oils, fats, and fatty acids in some organic solvents. II. The quantitative determination of oleic and elaidic acids in the presence of one another. J. P. K. van der Steur. *Rec. Trav. Chim. Pays-Bas*, June 15, pp. 409–416.

ORGANIC.—The preparation of pure oleic acid. S. H. Bertram. *Rec. Trav. Chim. Pays-Bas*, June 15, pp. 397–401.

The *N*-alkylimines of benzophenone. M. Sommelet. *Comptes Rend.*, May 30, pp. 1,338–1,339.

The mechanism of the formation of ketones during the dry distillation of salts of organic acids. C. Dosios and G. Leucaditis. *Comptes Rend.*, June 13, pp. 1,458–1,460.

# Patent Literature

*The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.*

## Abstracts of Complete Specifications

271,130. Fractional Distillation. E. Chur, 19, Steinfeldergasse, Köln, Germany. Application date, January 22, 1926.

The liquid to be separated into its components of different boiling points is first distilled in a main column apparatus in which, contrary to the usual practice, the vapours pass downwardly in the same direction as the liquid; the vapour space is divided into a number of sections from each of which

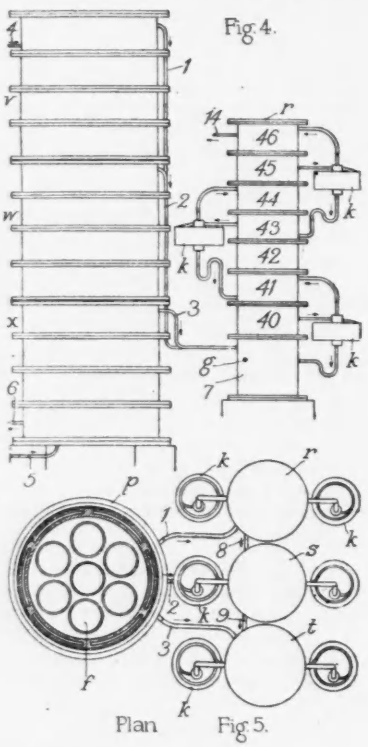


Fig. 4.



Plan Fig. 5.

271,130

vapours are withdrawn and rectified in separate auxiliary columns, the condensate from one being passed into the next. The figures show an arrangement of apparatus suitable for distilling crude benzol. The main column *p* consists of three sections, *v*, *w*, and *x*, each of which contains a number of "floors." Washing oil saturated with benzol enters by the pipe 4 and leaves at 6; vapours are withdrawn by pipes 1, 2, 3, and pass into the stills 7 of columns *r*, *s*, *t*, passing through the condensate therein. Vapours from the column portion 40 pass through the cooler *k*, and are then rectified in the column portions 42, 43. From 43 the vapours are again passed through a cooler and the operation repeated until finally the vapours of the pure product leave by the pipe 14. The condensate from the coolers is passed into a chamber lower than that from which the vapour was withdrawn. The condensate collecting in the still 7 of column *r* is passed into the still of column *s* to be treated with the vapours of higher boiling point withdrawn from the central section of the main column *p*. From the upper portions of *r*, *s*, and *t* vapours are withdrawn divided strictly according to their boiling points.

271,146. Arylides of 2 : 3-Oxynaphthoic Acid. British Synthetics, Ltd., and E. B. Higgins, Aldwych House, Aldwych, London. Application date, February 17, 1926. Addition to 262,958.

Acid substituted arylides of 2 : 3-oxynaphthoic acid are prepared by the method used for arylides which are not acid substituted according to Specification 262,958. (See The Chemical Age, Vol. XVI, page 90.) The reaction between 2 : 3-oxynaphthoyl chloride and the acid substituted amine takes place in the presence of a weak alkali such as sodium carbonate or bicarbonate, the amine not being dissolved in water prior to the action of the naphthoyl chloride. The amines specified according to examples are *m*- or *p*-nitraniline, *m*-nitro-*p*-toluidine, 2 : 5-dichloraniline, and sulphanilic acid.

271,169. Glycol Ethers. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 22, 1926.

The yield of glycol monoethers obtained by interaction of alkylene oxides with monohydric alcohols is improved by effecting the reaction in the presence of sulphuric acid or acid compounds thereof, or alkali metal alcoholates, or alkali metal salts of the lower fatty acids. Examples are given of the preparation of the following: Glycol monomethylether from ethylene oxide, methanol, and sulphuric acid; glycol monoethylether from ethylene oxide, ethyl alcohol, and sulphuric acid or sodium acetate; chlorpropylene-glycol monomethylether from epichlorhydrin and methanol; the ether $CH_3OH.CH_2.O.CH_2.CH_2.O.C_2H_5$ from glycolethylether, sodium, and ethyleneoxide; glycol monobutylethers from ethyleneoxide, sulphuric acid, and *n*-butyl, isobutyl, or secondary butyl alcohol.

271,181. Halogenated Indanthrones. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, W. D. Rogers, W. V. Stubbings, and F. W. Emerson, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, March 1, 1926.

These are produced by halogenating the purified indanthrone obtainable from commercial indanthrone by fractional precipitation from sulphuric acid as described in Specifications 9,269/14, 9,975/14, and 184,193 (see The Chemical Age, Vol. VII, p. 538). Further, if the chlorination of the purified dyestuff is carried out in sulphuric acid solution in presence of a catalyst such as sodium iodide, it is possible to prepare a monochloroindanthrone of very pure shade and having a fastness to bleach equal to that of more highly chlorinated indanthrones obtained by known methods. An example of the latter method is given.

271,236. Hydrocyanic Acid. Deutsche Gold und Silber Scheideanstalt vorm. Roessler, and F. Kerschbaum. Application date, May 5, 1926.

Hydrocyanic acid which has been absorbed in absorbent substances such as diatomite, infusorial earth, and kieselguhr is sometimes subject to decomposition. It is found that this may be avoided if the absorbent material is previously freed from basic substances by treatment with an acid or acid substance; the excess of the latter may be left in the absorbent as it has a favourable influence on the stability of the hydrocyanic acid. Known stabilising substances, or irritant or warning substances such as chloropicrin or cyanogen chloride may also be added.

271,264. Urea-formaldehyde Condensation Products. F. E. K. Steppes, 7, I Seehafenstrasse, Harburg-on-Elbe, and H. O. Traun, trading as Dr. Heinrich Traun and Söhne, vormals Harburger Gummi-Kamm-Compagnie, 59 Meyerstrasse, Hamburg, Germany. Application date, June 22, 1926.

The known glass-like condensation products from urea and formaldehyde are generally obtained by condensing the components in rather dilute aqueous solution, it being then necessary to remove a large amount of water from the product. According to this process solid polymers of formaldehyde are first converted, by aid of acid or alkaline reagents, into aqueous solutions containing at least 40 per cent. of formaldehyde, and are then condensed with the necessary urea by a short heating. The reaction mixture may contain as little as 25 per cent. of water, so that only very little water has to be

removed from the products and the latter are less liable to crack during the drying and hardening than are the known products. According to an example 480 parts of urea are dissolved in 300 parts of dilute ammonia solution in which have been dissolved 504 parts of paraformaldehyde. After filtering, if necessary, the clear mixture is boiled for ten minutes and poured into moulds in which it hardens after a time. The ammonia may be replaced by other alkalies, amines, salts such as acetates, formates, and sulphites, or acids such as hydrochloric acid or aromatic sulpho acids.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—248,012 (P. Kuhn), relating to furnaces for smelting iron, etc., see Vol. XIV, p. 39 (Metallurgical Section); 248,782 (I.G. Farbenindustrie Akt.-Ges.), relating to water-soluble condensation products, see Vol. XIV, p. 527; 248,791 (I.G. Farbenindustrie Akt.-Ges.), relating to α-keto-β-naphthols and condensation products of the benzanthrone series, see Vol. XIV, p. 527; 249,101 (Soc. of Chemical Industry in Basle), relating to urea-formaldehyde condensation products, see Vol. XIV, p. 527; 253,488 (I.G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs, see Vol. XV, p. 209; 259,961 (Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler), relating to β-pyridylhydrazine and its derivatives, see Vol. XV, p. 620; 262,397 (Metallbank und Metallurgische Ges.), relating to the production of sulphuric acid, see Vol. XVI, p. 167; 268,309 (Collin Akt.-Ges. zur Verwertung von Brennstoffen und Metallen), relating to the discharge of ammonium sulphate from saturating tanks, see Vol. XVI, p. 535.

## International Specifications not yet Accepted

269,549. ACID-PROOF CEMENTS. Portland-Cementwerk Baligen Ges., Balingen, Wurttemburg, Germany. International Convention date, April 13, 1926.

These resemble Portland or Roman cement and contain barium instead of calcium compounds. Thus a mixture of barium sulphate or carbonate with sand, clay or the like, with or without a reducing agent such as coke, may be crushed and burned. The chemical-resisting properties are improved by treating the product with $SO_4$ ions, for example by adding sulphates during the final grinding or by treating finished articles with sulphuric acid or a sulphate solution. The cements contain a proportion of aluminium silicate or iron oxide.

269,556. VULCANISATION ACCELERATORS. Rubber Service Laboratories Co., 335 South Main Street, Akron, Ohio, U.S.A. International Convention date, April 12, 1926.

Acetaldehyde mixed with acetylene, as obtained by passing acetylene through sulphuric acid containing a catalyst such as mercurous sulphate, is treated with a substance which will combine with it such as an aromatic amine. The latter is preferably allowed to react until the product is that corresponding to the proportion of three molecules of acetaldehyde to two molecules of aromatic amine; such products are useful as vulcanisation accelerators. Suitable amines are aniline, *p*-aminodimethylaniline, and aminophenol.

269,582. DIAZOSULPHAMIC ACIDS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 15, 1926. Addition to 266,388.

Specification 266,388 (see THE CHEMICAL AGE, Vol. XVI, p. 448) describes the preparation of diazosulphamic acids by mono-diazotising disulphamic acids. The same compounds are now obtained from nitrosulphamic acids by reducing in neutral solution, *e.g.*, with zinc dust and ammonium chloride or with iron and alkali chloride, and diazotising the resulting aminoarylsulphamic acids. According to examples, the sodium salts of *m*- and *p*-nitrophenylsulphamic acids, and of 6-nitro-2-tolylsulphamic acid are reduced with iron and common salt, and then diazotised. The products may be used for the preparation of azo dyestuffs.

269,583. STABLE COMPOUNDS OF AROMATIC DIAMINES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 17, 1926.

These are prepared by treating aromatic *p*-diamines with sulphur dioxide while excluding water. They are stable in air, easily soluble in water, and suitable for use as photographic developers or for dyeing dead and living hair. According to examples, sulphur dioxide is passed into benzene solutions of *p*-phenylenediamine and *p*-toluylenediamine, the compounds separating.

269,586. COLLOIDAL DISPERSIONS, ETC. M. Polanyi, 15, Waltraudstrasse, Mitte-Zehlendorf, and S. von Bogdandy, 14 Luisenstrasse, Dahlem, Berlin. International Convention date, April 16, 1926.

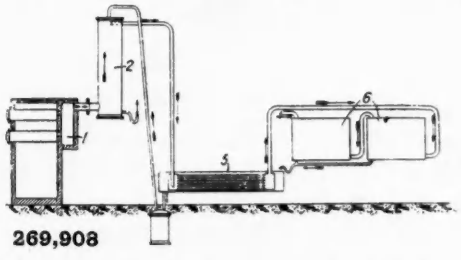
Mixtures of mutually insoluble substances in a finely dispersed state are obtained by volatilising the substances by cathodic atomisation in the electric arc, or by heating with cathode rays or high frequency eddy currents, mixing the vapours, and precipitating the mixture. The individual vapours may also be condensed separately and alternately, in quick succession on the same surface, which, in the device described, is a rapidly rotating cylinder cooled by liquid air. The process may be used for preparing colloidal metals in oils, such as sodium, zinc, or iron in paraffin, for the manufacture of alloys, and for pharmaceutical preparations.

269,593. LIGHT OILS AND GASES FROM COAL, TARS, OR MINERAL OILS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 16, 1926.

The treatment of coal, tars, etc., with superheated steam to produce light oils and gases is effected in the absence of metals such as free iron which assist the formation of carbon dioxide from carbon monoxide and steam. Suitable materials for forming or lining the walls of the reaction chamber are copper, silver, alloys of chromium and nickel or of nickel and iron, or aluminated iron.

269,908. PHOSPHORIC ACID. Urbain Corporation, 292, Madison Avenue, New York, U.S.A. International Convention date, April 21, 1926.

This is prepared in concentrated form by burning phosphorus-hydrogen compounds in the chamber 1, and passing



269,908

the resulting gases up the tower 2, down which flows phosphoric acid solution which is thereby concentrated. The cooled gases issuing from the tower are further cooled in the nest of tubes 5 and passed through the coke-filled chambers 6 in which the phosphorus pentoxide is absorbed in water. The resulting solution of phosphoric acid is circulated round the nest of tubes 5 and is then pumped into the tower 6 for final concentration.

269,917. DYEING AND PRINTING TEXTILES. Chemische Fabrik Milch Akt.-Ges., 67, Oranienburgerstrasse, and R. Lindner, 25, Mühlenstrasse, Oranienburg, Berlin. International Convention date, January 23, 1926.

When mordanting animal or vegetable fibres which are to be dyed or printed with mordant dyestuffs, the mordanting bath or printing paste contains a salt of the mordanting metal in question with aliphatic substituted aromatic sulphonic acids of high molecular weight, particularly palmitobenzene sulphonic acids, stearotoluene sulphonic acids, and isopropylnaphthalene sulphonic acids. Salts of chromium, iron, aluminium, copper, and tin can be used; they have good saturating and equalising properties and can be used with such materials as light oily cotton and carpet yarn still containing oil.

269,918. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 22, 1926.

Dyestuffs which are insoluble or nearly insoluble are kept in a state of fine subdivision by mixing with them an alkyl cellulose which may be added during or after the manufacture of the dyestuff. According to examples 2 : 3-oxynaphthoic anilide is coupled with diazotised 4-nitro-2-aminobenzoic acid in presence of methyl cellulose, and the paste of the dyestuff from β-naphthol and diazotised 3-nitro-4-aminotoluene is mixed with methyl cellulose. The method may be applied to vat dyes and aniline black dyes and the products may be worked up into colour lakes with alumina, etc.

269,934. Dyeing Cellulose Esters and Ethers. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 23, 1926.

Cellulose esters and ethers are dyed or printed with the monoazo dyes from diazo compounds of the benzene or naphthalene series not containing more than one sulphonic group and a *p*-substituted phenol capable of coupling in the *o*-position. The dyes from *p*-cresol on the one hand and the diazo compounds of *p*-phenylenediamine, acetyl-*p*-phenylenediamine, *p*-phenylenediamine-*o*-sulphonic acid, and *m*-chloraniline on the other hand are mentioned. Yellow or orange shades fast to light and chlorine are obtained.

Latest Notifications.

272,842. Process for the production of ammonia. Omnium des Industries Chimiques Procedes Tocco and Landi. June 15, 1926.

272,860. Process for the vulcanisation of rubber. Chemische Fabrik Kalk Ges. and Oehme, H. June 21, 1926.

272,864. Catalysts for synthetic methanol production. Commercial Solvents Corporation. June 21, 1926.

272,867. Gelatine for light-sensitive silver salts emulsions. I. G. Farbenindustrie Akt.-Ges. June 16, 1926.

272,908. Production of metallic compounds of dyestuffs. I. G. Farbenindustrie Akt.-Ges. June 15, 1926.

272,923. Manufacture of acetic anhydride. Consortium für Elektro-Chemische Industrie-Ges. June 16, 1926.

272,924. Manufacture of dyestuffs of the anthracene series. I. G. Farbenindustrie Akt.-Ges. June 15, 1926.

272,930. Synthesis of ammonia. Uhde, F. June 15, 1926.

272,941. Dyeing textile goods. I. G. Farbenindustrie Akt.-Ges. June 18, 1926.

272,949. Process for the production of dyestuffs containing copper and chromium. I. G. Farbenindustrie Akt.-Ges. June 17, 1926.

272,951. Manufacture of acetic anhydride. Consortium für Elektro-Chemische Industrie-Ges. June 17, 1926.

272,967. Manufacture and production of aliphatic and hydroaromatic sulphonic acids. I. G. Farbenindustrie Akt.-Ges. June 21, 1926.

## Specifications Accepted with Date of Application

248,759. Anthraquinone compounds, manufacture of. I.G. Farbenindustrie Akt.-Ges. March 3, 1925.

260,637. Thermo-plastic derivatives of rubber and methods of making same. B. F. Goodrich Co. November 2, 1925. Addition to 249,172.

262,456. Purification of alkali-metal cyanide solutions containing sulphides, Process for. I.G. Farbenindustrie Akt.-Ges. December 4, 1925.

264,464. Production of sodium sulphide, Process for. I.G. Farbenindustrie Akt.-Ges. January 18, 1926.

271,042. Converting high-boiling hydrocarbons into low-boiling hydrocarbons by means of aluminium chloride, Process for. Allgemeine Ges. für Chemische Industrie. May 12, 1926.

272,293. Condensers for use in the recovery of by-products arising in the carbonisation of coal. D. M. Henshaw. March 11, 1926.

272,301. Froth flotation concentration of coal. P. T. Williams and Minerals Separation, Ltd. March 12, 1926.

272,320. Lead alloys. S. Beckinsale and H. Waterhouse. April 16, 1926.

272,321. Triarylmethane dyes, Process for producing. British Dyestuffs Corporation, Ltd., E. H. Rodd, and F. W. Linch, April 17, 1926.

272,375. Distillation of solid fuels. C. Still. October 20, 1926.

272,376. Concentrated preparations of vitamine C, Preparation of. L. A. Agopian. October 25, 1926.

272,433. Converting high-boiling hydrocarbons into low-boiling hydrocarbons by means of aluminium chloride, Process for. Allgemeine Ges. für Chemische Industrie. June 19, 1926.

## Applications for Patents

Alexander, T. J. R., and Imperial Chemical Industries, Ltd. Explosives. 16,362. June 20.

Anderson, I. B., Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Production of benzanthrone derivatives. 16,894. June 24.

Anderson, I. B., Scottish Dyes, Ltd., Thomas, J., and Thomson, R. F. Production of dyestuff intermediates. 16,964. June 25.

Ashcroft, E. A. Metallurgy. 16,866, 16,867. June 24.

Ashcroft, E. A. Separating tin from ores, etc. 16,868. June 24.

Aspinall, T. Bleaching fabrics, etc. 16,918. June 25.

Baly, E. C. C., Baly, E. J., and Pollopas, Ltd. Manufacture of aldehyde condensation products. 16,783, 16,784. June 24.

Barker, S. G., British Research Association for the Woollen and Worsted Industries. Testing dyestuffs, etc. 16,557. June 22.

British Celanese, Ltd., Cadgène, E., and Rivat, G. Dyeing cellulose derivatives. 16,585, 16,586. June 22. (United States, June 30, 1926.)

British Dyestuffs Corporation, Ltd., Shepherdson, A., and Thornley, S. Manufacture of black and grey vat dyes. 16,731. June 23.

Du Pont de Nemours and Co., E. I. Leather substitute. 16,859. June 24. (United States, June 24, 1926.)

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of liquid products from coal, etc. 16,068. June 16.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of organic compounds. 16,252. June 18.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of hydrogen. 16,253. June 18.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of tanning-agents. 16,254. June 18.

I. G. Farbenindustrie Akt.-Ges. Recovering metals from scrap. 15,753. June 13.

I. G. Farbenindustrie Akt.-Ges. Manufacture of liquid hydrocarbons, etc. 15,722. June 13. (Germany, June 14, 1926.)

I. G. Farbenindustrie Akt.-Ges. Carrying out catalytic oxidations. 15,723. June 13. (Germany, June 14, 1926.)

I. G. Farbenindustrie Akt.-Ges. Production of metallic compounds of dyestuffs. 15,724. June 13. (Germany, June 15, 1926.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 15,967. June 15. (Germany, June 15, 1926.)

I. G. Farbenindustrie Akt.-Ges. Dyeing textile goods. 16,093. June 16. (Germany, June 18, 1926.)

I. G. Farbenindustrie Akt.-Ges. Production of dyestuffs. 16,172. June 17. (Germany, June 17, 1926.)

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of plaster compositions. 16,343. June 20.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Treatment of gases with liquids. 16,344. June 20.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Printing on acetate silk, etc. 16,345. June 20.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Separation of oils from mixtures. 16,346. June 20.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of hydrocarbons, etc. 16,347. June 20.

I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 16,377. June 20.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of iron. 16,968. June 25.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Metallic coatings of chromium, etc. 16,969. June 25.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of fertilisers. 16,970. June 25.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of iron, nickel, etc., from mixtures. 16,971. June 25.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of dyestuffs. 16,972. June 25.

I.G. Farbenindustrie Akt.-Ges. Manufacture of aliphatic and hydroaromatic sulphonic acids. 16,486. June 21. (Germany, June 21, 1926.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of coloured compounds. 16,847. June 21. (Germany, August 12, 1926.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 16,511. June 21. (Germany, June 24, 1926.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of amino-alkylamino derivatives of aromatic amino-oxy and polyamino compounds. 16,752. June 23. (Germany, July 8, 1926.)

I.G. Farbenindustrie Akt.-Ges. Production of anhydrous metal chlorides. 16,761. June 23. (Germany, August 13, 1926.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of cyclic ketones. 16,846. June 24. (Germany, June 24, 1926.)

Imray, O. Y., and I. G. Farbenindustrie Akt.-Ges. Manufacture of naphthalene derivatives. 16,092. June 16.

Pollopas, Ltd., and Spencer, G. Dyeing. 16,785. June 24.

Sacchi, M. Casale-. Production of hydrogen. 15,758. June 13.

Schmidt, F. Production of artificial materials from condensation products of urea, etc. 16,079. June 16. (Germany, December 8, 1926.)

Schuster, R. Manufacture of chromic acid. 16,741. June 23.

Stephens, A. J., and Wulfing, J. A. von. Manufacture of primary-propyl-ester of 2-phenylquinoline-4-carboxylic acid. 16,191. June 17.

Tcherniac, J. Manufacture of alkyl ethers of phenolic amides. 15,695. June 13.

Uhde, F. Method of separating ammonia from gases, etc. 15,984. June 15. (Germany, June 15, 1926.)

Uhde, F. Synthesis of ammonia. 15,985. June 15. (Germany, June 15, 1926.)

Verein für Chemische Industrie Akt.-Ges. Producing active carbons. 15,926. June 15. (Germany, July 3, 1926.)

Wakefield, J. Dyeing fabrics. 16,673. June 23.

Wecker, E. Manufacture of esters of fatty acids, etc. 15,681. June 13. (Germany, June 23, 1926.)

# Weekly Prices of British Chemical Products

*The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.*

## General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton for home market, 1-cwt. drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

## Coal Tar Products

ACID CARBOLIC CRYSTALS.—8d. to 9d. per lb. Crude 60's, 2s. 3d. to 2s. 8d. per gall.

ACID CRESYLIC 99/100.—2s. 8d. to 2s. 9d. per gall. 97/99.—2s. 1½d. to 2s. 4½d. per gall. Pale, 95%, 2s. to 2s. 2d. per gall. Dark, 1s. 9d. to 2s. 1d. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOLE.—Crude 65's, 1s. 0¾d. to 1s. 1¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 2s. 2d. per gall., ex works in tank wagons. Pure, 1s. 7d. to 2s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 8d. to 2s. 0½d. per gall. Firm. Pure, 1s. 10d. to 2s. 3½d. per gall.

XYLOL.—1s. 11d. to 2s. 4d. per gall. Pure, 2s. 6d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6¾d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 8¾d. per gall. Salty, 7d. per gall. less 1½%.

NAPHTHA.—Crude, 8d. to 9d. per gall. according to quality. Solvent 90/160, 1s. 2d. to 1s. 11d. per gall. Solvent 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent 90/190, 1s. 1½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £7 10s. per ton. Whizzed or hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. per ton, according to districts.

PITCH.—Medium soft, 75s. to 85s. per ton, f.o.b., according to district; nominal.

PYRIDINE.—90/140, 7s. 6d. to 13s. per gall. Nominal. 90/180, 4s. 6d. to 5s. per gall. Heavy, 5s. to 8s. per gall.

## Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—4s. 9d. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7½d. per lb. naked at works.

ANILINE SALTS.—7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

*o*-CRESOL 29/31° C.—4½d. per lb. Fair inquiry.

*m*-CRESOL 98/100%.—3s. per lb. Only limited inquiry.

*p*-CRESOL 32/34° C.—2s. 8½d. per lb. Only limited inquiry.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

*a*-NAPHTHOL.—2s. per lb. d/d.

*B*-NAPHTHOL.—11d. to 1s. per lb. d/d.

*a*-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

*B*-NAPHTHYLAMINE.—3s. per lb. d/d.

*o*-NITRANILINE.—5s. 9d. per lb.

*m*-NITRANILINE.—3s. per lb. d/d.

*p*-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb. d/d.

R. SALT.—2s. 2d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

*o*-TOLUIDINE.—7½d. to 8d. per lb. naked at works.

*p*-TOLUIDINE.—2s. 2d. per lb. naked at works.

*m*-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

## Wood Distillation Products

ACETATE OF LIME.—Brown, £8 10s. to £9 5s. per ton. Grey, £15 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£6 15s. to £10 per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall. 16° Tw.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 9d. to 4s. per gall., 60% O.P. Solvent, 3s. 11d. to 4s. 3d. per gall., 40% O.P.

WOOD TAR.—£4 to £5 10s. per ton and upwards, according to grade

BROWN SUGAR OF LEAD.—£40 15s. to £41 10s. per ton.

## Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

## Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4½d. to 2s. 6d. per lb.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, £40 to £43 per ton; powder, £44 to £47 per ton. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 7¾d. to 1s. 8d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P.—Pulv., 1s. 3½d. to 1s. 5d. per lb.; crystals, 1s. 10d. to 1s. 11d. per lb. Technical.—11¾d. to 1s. per lb.
ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.
ACID, TARTARIC.—1s. 3¾d. per lb., less 5%. Firm market.
AMIDOL.—9s. per lb., d/d.
ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.
AMIDOPYRIN.—8s 6d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.
ATROPINE SULPHATE.—11s. per oz. for English make.
BARBITONE.—6s. 6d. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. to 10s. per lb.
BISMUTH CITRATE.—9s. 6d. to 9s. 9d. per lb.
BISMUTH SALICYLATE.—8s. 9d. to 9s. per lb.
BISMUTH SUBNITRATE.—7s. 9d. to 8s. per lb.
BISMUTH NITRATE.—5s. 9d. to 6s. per lb.
BISMUTH OXIDE.—13s. 9d. to 14s. per lb.
BISMUTH SUBCHLORIDE.—11s. 9d. to 12s. per lb.
BISMUTH SUBGALLATE.—7s. 9d. to 8s. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.
BORAX B.P.—Crystal, £24 to £27 per ton; powder, £26 to £29 per ton, according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Potassium, 1s. 10d. to 2s. 1d. per lb.; sodium, 2s. 1d. to 2s. 4d. per lb.; ammonium, 2s. 3d. to 2s. 6d. per lb., all spot.
CALCIUM LACTATE.—1s. 3d. to 1s. 5d.
CHLORAL HYDRATE.—3s. 2d. to 3s. 5d. per lb., duty paid.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—Prices for Winchester quarts; dozen Winchester quarts; carboys or drums; and 10 cwt. lots respectively: ·730—1s. 2½d.; 1s. 2d.; 1s. 1½d.; 1s. 0½d.; ·720 technical—1s. 5½d.; 1s. 5d.; 1s. 4½d.; 1s. 3½d.; ·720 pur. (Aether B.P., 1914)—2s. 4d.; 2s. 3½d.; 2s. 3d.; 2s. 2d.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—5s. per lb.
HEXAMINE.—2s. 4d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (10 VOLS.).—2s. 3d. to 2s. 11d. per lb., according to quantity and package. B.P., 1 lb., 16s. per doz.; ½ lb., 9s. 6d. per doz.; ¼ lb., 6s. 6d. per doz.
HYDROQUINONE.—4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.
IRON PERCHLORIDE.—4d. per lb. to 22s. per cwt., according to quantity.
MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 18s. 6d. per lb. net; Synthetic detached crystals, 11s. to 14s. 6d. per lb., according to quantity; Liquid (95%), 12s. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 9d. per lb.
METHYL SULPHONAL.—11s. per lb.
METOL.—11s. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—3s. per lb.
PHENAZONE.—4s. 6d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—100s. per cwt. less 2½% for ton lots.
POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. for 1 cwt. lots.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.
QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. for 1000 oz. lots in 100 oz. tins.
RESORCIN.—4s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1 cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
SULPHONAL.—7s. 6d. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 2d. per lb.
THYMOL.—Puriss., 10s. 3d. to 11s. 6d. per lb., according to quantity. Firmer. Natural, 15s. per lb.

## Perfumery Chemicals

ACETOPHENONE.—7s. 3d. per lb.
AUBEPINE (EX ANETHOL), 10s. 6d. per lb.
AMYL ACETATE.—2s. per lb.
AMYL BUTYRATE.—5s. 3d. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—17s. per lb.
COUMARIN.—10s. per lb.
CITRONELLOL.—14s. 6d. per lb.
CITRAL.—8s. 9d. per lb.
ETHYL CINNAMATE.—7s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—9s. per lb.
GERANIOL (PALMAROSA).—17s. 6d. per lb.
GERANIOL.—6s. 6d. to 10s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—13s. 6d. per lb.
LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 18s. per lb. Ex Shui Oil, 14s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. 6d. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—8s. 6d. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—10s. 6d. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—32s. 6d. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—17s. to 18s. 6d. per lb. Good demand.

## Essential Oils

ALMOND OIL.—10s. 3d. per lb.
ANISE OIL.—3s. 1d. per lb.
BERGAMOT OIL.—28s. 6d. per lb.
BOURBON GERANIUM OIL.—14s. 9d. per lb.
CAMPHOR OIL.—67s. 6d. per cwt.
CANANGA OIL, JAVA.—26s. per lb.
CINNAMON OIL LEAF.—6d. per oz.
CASSIA OIL, 80/85%.—8s. 3d. per lb.
CITRONELLA OIL.—Java, 85/90%, 1s. 11d. per lb. Ceylon, pure, 1s. 9d. per lb.
CLOVE OIL.—6s. per lb.
EUCALYPTUS OIL, 70/75%.—2s. 3d. per lb.; 75/80%, 2s. 4d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 21s. per lb.
LEMON OIL.—8s. per lb.
LEMONGRASS OIL.—4s. 6d. per lb.
ORANGE OIL, SWEET.—10s. 6d. per lb.
OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 70s. per oz.
PALMA ROSA OIL.—10s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 18s. per lb. Japanese, 8s. per lb.
PETITGRAIN OIL.—7s. 6d. per lb.
SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

# London Chemical Market

*The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

*London, June 30, 1927.*

THE brighter tendency indicated last week has been maintained and business at last seems to be on the up grade. Prices are firm. Unfortunately the export demand is very quiet.

## General Chemicals

ACETONE is firm at £63 per ton.
ACID ACETIC has been in good demand, price unchanged at £37 to £38 per ton for 80% grade.
ACID CITRIC is quiet at 1s. 7½d. per lb.
ACID FORMIC is in good inquiry and is quoted £46 to £48 per ton for 85%.
ACID LACTIC.—Unchanged.
ACID OXALIC.—Only in moderate demand, price is very firm at about 3d. per lb.
ACID TARTARIC is a firm market and the spot price is slowly rising as second-hand parcels are absorbed.
ALUMINA SULPHATE is quiet but steady at about £6 per ton for 17–18%.
AMMONIUM CHLORIDE is quiet at £18 15s. to £19 per ton.
ARSENIC.—Unchanged.
BARIUM CHLORIDE is in fair demand at about £9 per ton.
COPPER SULPHATE.—Unchanged at £23 per ton.
CREAM OF TARTAR.—The first-hand market is firm at £102 per ton. Second-hand goods can be bought at about £96 per ton.
EPSOM SALTS.—Firm at £5 5s. per ton to £5 10s. per ton.
FORMALDEHYDE is in quiet demand at about £41 per ton.
LEAD ACETATE is rather firmer at £42 10s. to £43 per ton.
LEAD NITRATE.—Unchanged at £38 to £39 per ton.
METHYL ACETONE is in steady inquiry at about £62 per ton for first grade.
METHYL ALCOHOL.—Unchanged.
POTASSIUM CHLORATE is easy at 3¼d. per lb.
POTASSIUM PERMANGANATE.—Price is very firm at 7½d. per lb. to 8d. per lb.
POTASSIUM PRUSSIATE is an easy market at about £64 per ton.
SODA ACETATE.—Unchanged at £18 15s. to £19 per ton.
SODIUM BICHROMATE.—Unchanged.
SODA HYPO.—Unchanged.
SODIUM NITRATE is very quiet, price about £19 10s. per ton.
SODIUM PRUSSIATE is very firm at 4⅜d. per lb.
SODIUM SULPHIDE.—Unchanged.
ZINC SULPHATE.—Unchanged.

## Coal Tar Products

The market values of coal tar products have changed little from last week, and there is practically no prompt business.

90's BENZOL is still plentiful, and is quoted at 1s. 2¾d. to 1s. 3d. per gallon, on rails, while the motor quality is worth about 1s. 2d. per gallon.
PURE BENZOL is worth about 1s. 8d. to 1s. 9d. per gallon.
CREOSOTE OIL is still firm for spot delivery, prices being unchanged at 7¼d. per gallon, on rails in the North, while the price in London is 8¾d. to 9d. per gallon.
CRESYLIC ACID remains steady, and the pale quality, 97/99%, is very scarce for prompt delivery. It is quoted at 2s. 3d. to 2s. 4d. per gallon, on rails, while the dark quality, 95/97%, is worth about 1s. 10d. per gallon.
SOLVENT NAPHTHA.—There is very little business being done, and it is worth from 10½d. to 11d. per gallon.
HEAVY NAPHTHA can be bought at 11d. per gallon, on rails.
NAPHTHALENES.—For the 74/76 quality there is practically no demand. Prices remain unchanged at £6 to £6 10s. per ton, while the 76/78 quality remains steady at £8 to £8 10s. per ton.
PITCH.—More interest is being shown in pitch both for prompt and for forward delivery. Supplies are not abundant, and the market is rather firm at 80s. to 85s., f.o.b. U.K. ports.

## Latest Oil Prices

LONDON, June 29.—LINSEED OIL quiet and 5s. lower to unchanged. Spot, ex mill, £33 5s.; June, £32 5s.; July-August, £32 10s.; September-December, £33 2s. 6d. RAPE OIL inactive. Crude extracted, £43 10s.; technical refined, £45 10s., naked, ex wharf. COTTON OIL quiet. Refined common edible, £41 10s.; Egyptian crude, £35 10s.; deodorised, £43 10s. Turpentine steady at 3d. to 6d. per cwt. decline. American, spot, 37s., paid and sellers; July-December, 38s. 3d., paid and sellers.

HULL, June 29.—LINSEED OIL.—Naked, spot, £33 5s.; June, £33 5s.; July-August, £33 5s.; September-December, £33 5s. COTTON OIL.—Naked, spot, Egyptian crude, £35; edible refined, £39; technical, £38; deodorised, £41. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., spot, £37 5s. GROUNDNUT OIL.—Spot, crushed/extracted, £43 10s.; deodorised, £47 10s. SOYA OIL.—Spot, extracted, £33 5s.; crushed, £33 5s.; deodorised, £36 15s. RAPE OIL.—Spot, crushed/extracted, £43; refined, £45 per ton, ex mill. CASTOR OIL.—Spot, pharmaceutical, in barrels, 50s. 6d.; first, 45s. 6d.; second, 42s. 6d. COD OIL, in barrels, 29s. 6d. per cwt.

## Nitrogen Products

*Export.*—During the past week the sulphate of ammonia marke has continued weak and the price of £9 5s. per ton f.o.b. U.K. port in single bags has been quoted for July/August shipment.

*Home.*—Merchants in certain parts of the country report small orders for prompt delivery. The totality of these orders must be considerably in excess of normal for the month of June. Last season's price scale remains in force. The British producers announce that there will be a big cut for August delivery and onwards. The special offer to fertiliser manufacturers for June/August is at the maximum price of £9 10s. per ton. Unless the situation changes since this offer was made, it appears likely that the price scale to farmers will commence in the vicinity of £10 per ton. It is understood that the usual advances in price each month will take place until the peak is reached in March/April.

*Nitrate of Soda.*—It has been reported in Chile that the production for May was 108,000 tons, and that an increase on this is expected on account of the increased activity of the oficinas controlled by Messrs. Guggenheim. Sales continue on the basis of 16s. 7d. to 16s. 9d. per metric quintal f.a.s. Chile. A little respite is expected from the recent activity as merchants' commitments are now in the vicinity of 750,000 tons.

## U.S. Mercury Statistics, 1926

THE mercury production of the United States in 1926 amounted to 7,645 flasks of 75 lb. each, according to the preliminary figures compiled by the United States Bureau of Mines, Department of Commerce. The imports were 28,614 flasks, and the average New York price for the year was $91.90. In 1925 the domestic output was 9,174 flasks; the imports were 22,781 flasks, and the average New York price was $83.13. The total value of the 1926 domestic production, based upon the average New York price for the year, was $702,598. The 1926 production was made by seven mines in California, by nine mines located in Arizona, Idaho, Nevada, Texas, and Washington, and by one mine in Alaska. The production from Alaska is from the Iditarod district, and is the first on record for many years. The imports of mercury were 11,768 flasks derived from Italy, 14,117 from Spain, and 2,729 flasks from the rest of the world. The exports were 116 flasks. On December 31, 1925, there were 1,181 flasks in bonded warehouses; on December 31, 1926, there were 2,277 flasks in bonded warehouses. The outstanding features of the year are the decreased domestic production, and increased imports, with a material increase in price. The large consumption indicated may be attributed in part to the manufacture of radio tubes, electrical appliances, and corrosive sublimate.

## Fertiliser Trade: Census of Production

THE preliminary report on the Third Census of Production (1924) given in the *Board of Trade Journal* for June 16 dealt with (among other things) the fertiliser trade. Figures for production in 1924 and 1907 respectively in Great Britain only were as follows: Basic slag, 96,000 tons, value £165,000 (203,000 tons, £277,000); superphosphates, 196,000 tons, value £566,000 (438,000 tons, £924,000); sulphate of ammonia, 5,000 tons, value £57,000 (1,000 tons, £13,000); guano, manufactured and compound manures, 401,000 tons, value £2,601,000 (396,000 tons, £1,838,000). The production of sulphate of ammonia shown in the above table represents only a small fraction of the entire output of Great Britain, which will not be calculable until the quantities produced by gas undertakings and other works engaged in the recovery of coal tar by-products have been ascertained.

# Scottish Chemical Market

*The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

*Glasgow, June 29, 1927.*

BUSINESS in the heavy chemical market continues fairly active, with the proportion of orders in relation to inquiries received good. Prices are on about the same level as last reported, an exception being sodium sulphide of English manufacture which has been reduced by £1 per ton for solid and 5s. per ton for crystals.

### Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton, powder, £36 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In fairly good demand and price unchanged at about 8¼d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Rather quieter but prices maintained at about 1s. 6½d. per lb., less 5%, ex store for English material, and 1s. 7d. per lb., less 5%, ex wharf for continental.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. 9d. per carboy. Dearsenicated quality 6s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC.—Still in good demand and price unchanged at 3d. per lb., ex store, spot delivery. Offered from the Continent at 2¾d. per lb., ex wharf.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In good demand and price advanced to about 1s. 3¾d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Rather cheaper quotations from the Continent. Lump quality now quoted £8 2s. 6d. per ton, c.i.f. U.K. ports; powder, 2s. 6d. per ton less. Lump quality on spot offered at £9 2s. 6d. per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d., per lb. delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture quoted £23 to £24 per ton, ex station. Continental material on offer at about £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £18 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material unchanged at about £18 15s. per ton, ex store. Offered for prompt despatch from mines at £17 10s. per ton, ex wharf.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £7 2s. 6d. per ton, c.i.f. U.K. ports, packed in casks. Bags, 5s. per ton less. Spot material on offer at £8 15s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4-ton lots. Spot material, 10s. per ton extra. Continental on offer at £7 10s. per ton, ex wharf.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid, U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight concession for contracts. Continental quoted £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—Continental material cheaper at about £24 per ton, c.i.f. U.K. ports. British material on offer at £24 10s. per ton, f.o.b. nearest port.

FORMALDEHYDE 40%.—Unchanged at £38 per ton, c.i.f. U.K. ports. Spot material quoted £39 5s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £33 per ton, ex store.

LEAD, WHITE.—About £33 5s. per ton, ex store.

LEAD ACETATE.—White crystals offered from the Continent at £42 7s. 6d. per ton, c.i.f. U.K. ports; brown about £40 5s. per ton, c.i.f. U.K. ports; white crystals offered on spot at about £43 15s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £27 5s. per ton, ex wharf, early shipment. Spot material on offer at about £28 10s. per ton, ex store.

POTASSIUM CHLORATE.—Powdered quality on offer at £24 5s. per ton, c.i.f. U.K. ports. Crystals, £2 per ton extra.

POTASSIUM NITRATE. — Refined granulated quality quoted £20 12s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £21 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE, YELLOW.—In good demand and price unchanged at about 7½d. per lb., ex store, spot delivery. Offered for shipment at 7¼d. per lb., c.i.f. U.K. ports.

SODA, CAUSTIC.—Powder, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4-ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material quoted £22 per ton, ex store. Continental rather higher at about £17 17s. 6d. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¾d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powder or pea quality, £1 7s. 6d. per ton; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store, minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 15s. per ton, ex store.

SODIUM PRUSSIATE, YELLOW.—Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf. Spot material on offer at 4½d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—English manufacturers advise reduction in price. 60/65% solid now £10 10s. per ton; broken, £11 10s. per ton; flake, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery, 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 per ton; rock, £11 per ton; floristella, £10 per ton; ground American, £9 5s. per ton, ex store, prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted at £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material on offer at about £10 10s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

### Intermediates

GAMMA ACID.—4s. 9d. per lb., per 100%. Some inquiries.

BETA NAPHTHOL.—11d. to 1s. per lb. Fair inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some inquiries.

ORTHONITROTOLUOL.—4½d. per lb. Good export inquiries.

ORTHO TOLUIDINE.—8d. per lb. Some home inquiries.

R. SALT.—2s. per lb. Some inquiries.

# Manchester Chemical Market

(From Our Own Correspondent.)

*Manchester, June 30, 1927.*

Whilst nothing substantial in the way of improvement has yet occurred, a slightly better undercurrent of business has been in evidence on the chemical market here during the past week. Users seem to have got over the disturbing influence of the holidays and a fair volume of trade is being done on home consumption account, whilst inquiry in respect of forward business shows some indication of expanding. Export demand on this market remains quiet, however, and for the most part is confined to small parcels of the principal "heavies."

### Heavy Chemicals

Hyposulphite of soda is attracting a moderate amount of interest and values are steady, with the commercial grade on offer at £9 10s. per ton and the photographic at £15 5s. to £15 10s. Makers have maintained their quotations for bleaching powder at £8 per ton, and a quietly steady trade is being done. Phosphate of soda is well held at about £12 15s. per ton, though current sales of this are on the slow side. Sulphide of sodium is also in somewhat limited demand and values are easy at about £11 5s. per ton for 60-65 per cent. concentrated solid and £8 10s. for commercial quality. Only a relatively quiet trade is being put through in the case of prussiate of soda, but there has been little change in price levels, about 4¼d. per lb. still being asked. A moderate inquiry for nitrite of soda is reported at £9 per ton. Caustic soda continues firm and sales of this are on a steady scale, with quotations ranging from £14 10s. per ton for 60 per cent. quality up to £16 10s. for 76 per cent. Glauber salts are still in limited request at £3 7s. 6d. per ton. Chlorate of soda is about unchanged on the week at 2¾d. per lb., but the demand is on quiet lines. Alkali meets with a fair inquiry and prices are held at £6 15s. per ton. Bicarbonate of soda is in a similar position, values in this case being round £10 10s. per ton. Saltcake is in quiet demand at about £3 15s. per ton. Bichromate of soda is on offer at round 3d. per lb. and sales of this during the past week have been on a moderate scale.

A fair trade is reported in the case of caustic potash and offers are firm at from £29 to £30 10s. per ton according to quality. Yellow prussiate of potash is cheaper and about 6⅜d. per lb. is now being quoted for this material, without attracting much interest from buyers. Permanganate of potash meets with a moderate inquiry and values are maintained, B.P. quality being offered at 6½d. per lb. and commercial at 5¼d. to 5½d. At 3⅜d. per lb. chlorate of potash shows little change on the week, but the demand is still of limited extent. Bichromate of potash continues steady at 4d. to 4¼d. per lb., and inquiry in this section is fairly active. Carbonate of potash meets with a quietly steady demand at £27 5s. per ton.

Arsenic is on the easy side with current quotations at round £15 10s. per ton at the mines for white powdered, Cornish makes; the demand is still rather quiet and no improvement can be reported this week. Sulphate of copper is in moderate request and prices are steady at up to £25 10s. per ton, f.o.b. The lead products meet with a quiet demand and the price position is not too strong although not actually changed much on the week; white acetate is quoted at about £43 10s. per ton and brown at £40 10s. to £41, with nitrate of lead on offer at round £18 5s. Acetate of lime is fairly steady and meets with a moderate inquiry at £15 10s. per ton for grey and about £8 5s. for brown.

### Acids and Tar Products

Tartaric acid is in fair request and quotations are steady, current values ranging from 1s. 3d. to 1s. 3¼d. per lb. Citric acid is on the quiet side, but prices are fully maintained at 1s. 6½d. per lb. Oxalic acid is moderately active at about 3d. per lb. A quietly steady inquiry for acetic acid is reported at round £66 10s. per ton for glacial and from £37 to £38 per ton for the commercial material.

With spot parcels still scarce pitch is fully maintained at round £4 2s. 6d. per ton. Creosote oil continues fairly active and values are firm at 7½d. to 7¾d. per gallon. Solvent naphtha is weak at 1s. 2d. per gallon and no expansion in buying interest can be reported. Carbolic acid shows little change on the week, crude quality being quoted at round 2s. 3d. per gallon and crystals at 8d. to 8¼d. per lb.

# Inspector's Annual Report on Scottish Alkali Works

### Reduced Production of Fertilisers

*Below we give the conclusion of the extracts from the 63rd Annual Report on Alkali Works in Scotland, by Mr. J. W. Young.*

### Sulphuric Acid and Sulphuric Acid (Class II) Works

Production fell by another fifth, the loss being due to diminished recovery of ammonia compounds at blast furnaces and gas works. Three works were idle throughout the year. Additional apparatus has been erected to supply the necessary nitrous gas by oxidation of ammonia, and has been at work satisfactorily. This subsidiary process has many advantages particularly at times of starting again to manufacture acid after interruptions. A works cut out its fourth chamber and claims to have saved nitre without reducing yield of acid.

The tendency to burn spent oxide, from gas purifiers, instead of pyrites is increasing, partly from rather lower cost and partly from the absence of arsenic. The mechanical types of kiln continue to do good work and are more numerous. The general average acidity in each cubic foot of residual gases discharged by sulphuric acid works was 0·47 grain of sulphuric anhydride; the highest and lowest averages for any one work were 0·76 and 0·03 respectively. Manufacture of stronger acid by the Class II process has been busily and satisfactorily maintained, with efficient condensation of acid gases before discharge. There has been no improvement in demand for ordinary concentrated acid, so that much good plant has been idle. The general average acidity of the final gases from Class II works was 0·35 grain of sulphuric anhydride.

### Chemical Manure Works

There was again a heavy fall in production of fertilisers, and profits must have been low or absent entirely in the effort to compete with foreign imports made under easier financial conditions. Plant is highly efficient and has been kept in good order, so that condensation of corrosive gases was excellent, varying from 96·7 up to 99·7 per cent. The general average of the total acid in each cubic foot of gases escaping finally was 0·09 grain, expressed as the $SO_3$ equivalent of hydrofluosilicic acid.

### Sulphate and Muriate of Ammonia and Gas Liquor Works

This group, far more numerous than any other, supplies more opportunity for general annoyance and even danger to life. Recovery of ammonia has been much smaller than in recent years. Less coal has been available, and that imported has contained less nitrogen. Two cases were noted of blue salt, an old trouble almost forgotten, due to cyanogen resulting from higher temperatures within gas retorts. As usual, the blame was wrongly assigned to impurities in sulphuric acid. Several works have found great advantage from improving their arrangements of cooling and condensation; plants again have been wholly rebuilt.

The prospects of this industry are unattractive; cost of acid and of transport of crude liquor induce many smaller works to run it wastefully to sea. Possibly direct application to agricultural soil, or an easier conversion to urea than at present, may be the method of the future.

### Zinc Works

These works were long idle, wanting fuel. Conditions of manufacture remain unchanged; but no complaint was received against them during the period of operation. In a few miscellaneous works there has been great activity and increased production, though not in all. Plant has been kept in good order throughout.

---

## Oil, Chemical, and Colour Trades' Exhibition

International Trades Exhibitions, Ltd., inform us that the next exhibition will not be held next year (as inadvertently stated last week) but in 1929, and desire attention to be drawn to this fact, as this was one of the principal points raised at the exhibitors' meeting. There were a number of firms who would have liked an exhibition next year, but the majority were in favour of 1929. The promoters state that it was never their real intention to make this exhibition annual.

# Company News

BROKEN HILL SOUTH.—A dividend at the rate of 1s. 6d. has been declared payable on August 15.

UNITED INDIGO AND CHEMICAL CO.—An interim dividend of 2½ per cent. actual is announced on the participating preference shares.

ASBESTOS CORPORATION OF CANADA.—The directors have declared a dividend of 1¾ per cent. on the preferred stock, payable on July 15.

MINERALS SEPARATION.—The profit for the year 1926 amounted to £26,688, and £9,052 was brought forward. A dividend of 10 per cent. is declared.

B. LAPORTE, LTD.—The directors announce that the half-yearly dividend on the preference shares of the company, due to June 30, was payable on that date.

BARRENCHEA NITRATE CO.—For the year ended December 31 last, the net result, after charging stoppage and administration expenses, is a loss of £8,354.

ANDRADE NITRATE CO.—The accounts for the year 1926 show a loss of £9,881, after providing for interest charges, and £7,915 was brought forward, leaving an adverse balance of £1,975.

TARSLAG (1923), LTD. (AND REDUCED).—A dividend is announced at the rate of 30 per cent. per annum on the 8 per cent. cumulative preference shares for the six months ended December 31.

SHIP CANAL PORTLAND CEMENT MANUFACTURERS.—A net profit of £60,397 is shown for the year 1926, to which is added £23,663 brought forward. A dividend has been paid on the 7½ per cent. preference shares, and £11,203 is carried forward.

SPANISH RIVER PULP AND PAPER CO.—The usual quarterly dividends of 1¾ per cent. have been declared on both the common and preferred stock for the quarter ending June 30, to shareholders on record on that date, dividends being payable on July 15 next.

LAGUNAS NITRATE CO., LTD.—The gross profit for the twelve months ended December 31 last amounted to £17,473, including transfer fees, interest on investments, and bank deposit. The disbursements were £29,413, and the balance of £11,940 has been carried to the debit of the profit and loss account.

DE BEERS CONSOLIDATED MINES, LTD.—In respect of the financial year ending June 30, 1927, a final dividend of 20 per cent. has been declared. The directors have also declared a final dividend of 30 per cent. to the deferred shareholders registered on June 30, making a total of 60 per cent. for the year, the same as for 1925–26.

NIGER CO.—The directors announce that a full year's dividend in respect of the year ending June 30, 1927, will be paid, less income tax, on July 21 on £500,000 8 per cent. cumulative preference shares and £1,500,000 8 per cent. non-cumulative preference shares to all shareholders registered in the books of the company at the close of business on July 14. The last dividend paid by the company was on October 30, 1920, being in respect of the half-year ended June 30, 1920.

STANDARD CHEMICAL CO.—The report for the year ended March 31, 1927, states that profits from operations were $194,979, as compared with $34,835 for 1926. After deducting $30,303 for interest on bonds and debentures and $160,000 for depreciation, the net profit was $4,676. During the year funded and mortgage debt was reduced by $61,846 and current liabilities by $54,813, making a total reduction of $116,660. Current assets show an increase of $112,872. Total sales were $1,634,657 and 40,182 cords of wood were carbonised, an increase of $117,262 and 428 cords respectively over the previous period. The annual meeting will be held in Toronto on July 28, and a meeting of shareholders in United Kingdom is called for July 6 at Winchester House, London, at 11.30 a.m., for the purpose of discussing the directors' report and accounts. At that meeting the committee hope to be in a position to explain in general terms a reorganisation scheme.

INTERNATIONAL PULP AND CHEMICAL CO.—Holders of the 8 per cent. participating preference shares are being invited to exchange their shares for shares of the Inveresk Paper Co. In exchange for each complete five shares the Inveresk Paper Company offer a sum of 5s. in cash and the following shares of the Inveresk Company—namely, one ordinary share of £1 credited as fully paid and five 6½ per cent. B cumulative preference shares of £1 each credited as fully paid, such preference shares being part of an issue of 600,000 such shares about to be created. The preference shares will rank after the existing 8 per cent. cumulative preferences hares, with dividend accruing as from July 1 next. In a circular issued to the shareholders, the chairman of the Inveresk Paper Company confidently predicts that the year's dividend on the ordinary shares of the latter concern will be at least 35 per cent., and holders of the International preference shares will be entitled to participate in the balance payment if they accept the offer. He also expresses the view that if the Inveresk Company's business continues to prosper, future returns will be even more satisfactory.

MAGADI SODA CO.—The accounts for the year 1926 show a loss of £35,498 before providing for depreciation. The report of the directors states that this result was due to production being discontinued in the early part of February, 1926, in order to enable old stocks to be cleared, but advantage was taken of the period of cessation to overhaul the plant thoroughly, to effect many minor improvements, and to modernise the European and native housing accommodation. The benefit of the work on the plant, the report adds, has been apparent since production recommenced in August, 1926. There is a sum of £6,680 available for distribution, which will enable interest at the rate of 1 per cent. (which, with the 5 per cent. already distributed, gives the full rate of 6 per cent.) to be paid to the Debenture holders, and will leave a balance of £1,681 available to pay a dividend at the rate of 0·768 per cent. to the first preference shareholders. The directors announce that Sir Alfred Mond, Bt., M.P., has resigned from the board and the chairmanship owing to his many other engagements, and that Sir John Brunner, Bt., has joined the board and accepted the chairmanship. Mr. Arthur Colegate has resigned from the board and Mr. A. R. Gregory has been elected in his place. The directors have also appointed Mr. Duncan Marsh and Lieut.-Colonel G. P. Pollitt, D.S.O., to the board.

## Chemical Trade Inquiries

*The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.*

CHEMICALS.—An agent in Brisbane desires to obtain the representation of British firms. (Reference No. 648.)

PROCESS CHEMICALS, LITHOGRAPHIC MATERIALS AND CHEMICALS, ETC.—A well-established firm of photo-engravers, colour printers, etc., in Calcutta desire to obtain agencies of British manufacturers. (Reference No. 650.)

SULPHATE OF COPPER.—An agent established at Fiume is desirous of securing the representation of British exporters. (Reference No. 664.)

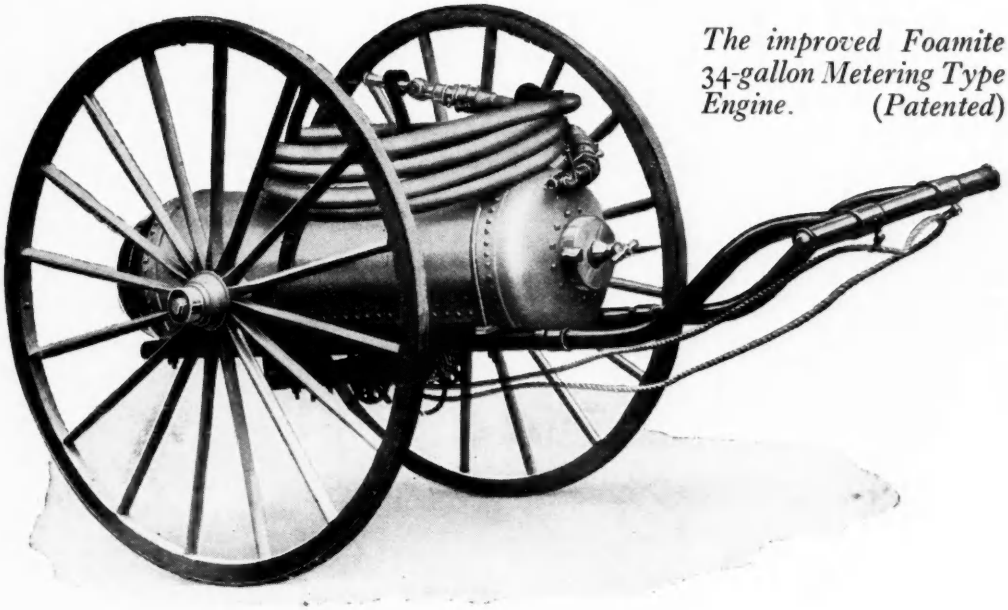
## Tariff Changes

IRAQ.—The text of the Oil and Oil Products Duties Law providing for the taxation of oil and oil products imported into Iraq or produced internally is contained in the *Board of Trade Journal* of June 23, 1927.

ZANZIBAR.—Two Decrees which became effective on July 1, 1927, have been issued to regulate the dispensing and sale of drugs and poisons and for controlling the importation, manufacture, sale, and use of opium and other dangerous drugs. The text may be seen at the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

### Benn Bros'. Staff Visit to Cambridge

ON Saturday, June 25, the staff of Benn Brothers, Ltd., publishers of THE CHEMICAL AGE and associated journals, visited Cambridge. Lunch was taken at the Lion Hotel, and in the course of the short speeches which followed, Sir Ernest Benn took the opportunity of introducing the new deputy-chairman of the firm, Mr. Gordon Robbins, to the assembled company. Afterwards the party broke up into groups and visited various places of interest in the colleges. The return to London was made in the evening.



*The improved Foamite 34-gallon Metering Type Engine. (Patented)*

# *A halt to Fire's Destruction*

Already enjoying an unrivalled record for efficiency, the value of the Foamite 34-gallon Engine as a unit for fighting either fires involving inflammable liquids or ordinary outbreaks has now been *greatly enhanced*.

The special internal construction of the new metering type engine ensures that the two solutions are automatically measured out in correctly proportioned quantities, and the great advantages obtained will be readily appreciated for the following reasons:—

(*a*) Although the same quantity of each solution is used in the new type of engine as was used in the old, the *Firefoam output* is approximately 50% *greater*.

(*b*) The *discharge period* is lengthened to approximately *four minutes*, so that greater time for manœuvring at a fire is given.

(*c*) *The jet remains steady* during operation—there is no "tailing off" as in the case of the old type.

(*d*) The Firefoam produced by the metering type engine is of excellent quality and *consistent throughout the discharge*.

N.B.—There is no advance in the price of the Foamite 34-gallon Engine.

***Submit your fire problems to***
***Foamite Firefoam Ltd.***
***55-57 Gt. Marlborough Street,***
***LONDON, W.1***

# Foamite Fire Protection

**A Complete Engineering Service**

## *Against Fire*

# Commercial Intelligence

*The following are taken from printed reports, but we cannot be responsible for any errors that may occur.*

## County Court Judgment

*[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]*

NEW BRITISH DRUG CO., 316, Sentinel House, Southampton Row, W.C., drug dealers. (C.C., 2/7/27.) £21 19s. 1d. May 19.

## Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

GODFREY (A. D.), LTD., Birstall (Leics.), dyers and bleachers. (M., 2/7/27.) Registered June 18, £5,000 mortgage to A. Cayless, Durley Dene, Uppingham Road, Leicester; charged on various properties at Birstall.

GRANCRETA CO., LTD., Leeds, manufacturers of chemical fertilisers. (M., 2/7/27.) Registered June 18, £1,197 (not ex.) mortgage, to Building Society; charged on land and buildings in Copgrove Road, Roundhay Road, Leeds. *Nil. January 7, 1927.

## London Gazette, &c.

### Company Winding Up Voluntarily

NATIONAL DRY CLEANERS, LTD. (C.W.U.V., 2/7/27.) By Special Resolution, April 16, confirmed, June 16. N. Thwaite, 59–61, New Oxford Street, London, W.C.2, Chartered Accountant, appointed as liquidator.

## New Companies Registered

D. W. L. SYNDICATE, LTD., 25, Bond Street, Leeds. Registered June 25. Nom. capital, £1,000 in 6d. shares (15,000 10 per cent. participating preference and 25,000 ordinary). To carry on the business of engineers, marine, locomotive, and general manufacturers; factors and dealers in liquid fuel burners, liquid fuel-fired furnaces, atomisers, dust burners, furnace builders, brick manufacturers, miners, metallurgists, chemists, manufacturers of and dealers in ores, metals, chemical and other products, carbon black and vegetable black producers, etc. The permanent governing directors are: R. Davy, D. N. Wright, and E. Laycock.

SOUTH AFRICAN CARBIDE AND BY-PRODUCTS CO., LTD. Particulars filed on June 20, 1927, pursuant to Section 274 of the Companies (Consolidation) Act. The capital is £60,000 in 40,000 shares of £1 and 400,000 shares of 1s. The company was incorporated in South Africa on August 10, 1926, to carry on the business of chemical manufacturers, buyers and sellers of coal, shale, lime, and minerals, manufacturers of and dealers in calcium carbide, coke, coal tar, ammonium sulphate, pitch, etc. The British address is 10–11, Austin Friars, E.C.2, where T. Honey and W. Bailey are authorised to accept service of process and notices on behalf of the company. The directors are: J. C. Crosby, Sir R. A. Blankenberg, K.B.E., and F. R. Caithness, all of Johannesburg.

### U.S. Atmospheric Nitrogen Utilisation

THE United States now has seven synthetic ammonia installations for the fixation of atmospheric nitrogen, with a combined capacity of about 80 tons a day. While none of this output is finding its way as yet into agricultural use, it is having the indirect effect of forcing additional quantities of by-product ammonia into the fertiliser market. The large cyanamide plant on the Canadian side of Niagara Falls is not included in the above list.

### Low Pressure Air Nitrogen Process

ANNOUNCEMENT has been made of the formation of the Societa Anonima Industria Ammoniaca at Padua, Italy, for the production of synthetic ammonia at low pressure by the Carrara process. An experimental plant has been erected to test the process. The nitrogen is to be obtained from liquid air, and hydrogen will be produced by a new type of electrolytic cell. The process was perfected by the late Professor Giacomo Carrara, professor of electrochemistry at the Polytechnic Institute of Milan. It is said to have the following characteristics and advantages, as compared with other processes for the production of synthetic ammonia: (1) Estimated working pressure approximately 150 atmospheres; (2) greater simplicity of the individual apparatus and parts; (3) longer active life of the apparatus and reduced danger of explosion due to the low pressure; (4) production of a 20 to 25 per cent. ammonia solution; (5) a higher yield and permanence of the catalyst than has heretofore been obtained and greater facility in changing the catalyst and in the resumption of normal production; (6) suitability for small plants with production on a small scale.

### Chemical Manufactures in Corporation Gasworks

IN their new Provisional Order, Dundee Corporation seek to obtain powers to manufacture and sell, in addition to the by-products of gas manufacture, any other product in which these might be used alone or in combination with any other materials. Objections to the clauses embodying these proposals were made in the petition of William Briggs and Sons, Ltd., chemical manufacturers, of Dundee, and were sustained before committees of both Houses of Parliament, and before the Speaker's counsel. The grounds of the petition were that in seeking the powers asked the Dundee Corporation proposed to go far beyond the powers which Parliament had hitherto granted to gas undertakings.

The Chairmen of the committees have decided to report to the Secretary of State that the clauses referred to ought to be struck out of the Provisional Order, and that if the Dundee Corporation wish to apply for the powers mentioned, they must do so by means of a private Bill.

### The Future of Arcos, Ltd.

M. KHINCHUK, formerly head of the Soviet Trade Delegation in Great Britain, stated in Moscow last week that the activities of Arcos would be liquidated, and, further, that no new orders would be placed with British firms, "in spite of many offers received from British firms to carry on operations on more favourable terms."

The fact that Russian employees of Arcos were advised to leave England within a fixed period of time may impede Soviet economic organisations in carrying out their obligations.

### Benn Brothers' Other Journals

THE CABINET MAKER.—Satin Finish: Notes from the Home Journals.

DISCOVERY.—"Exploring the Coral Reefs of Tahiti," by Cyril Crossland, M.A., D.Sc., F.Z.S.; "Prediction in Medical Science," by Professor D. Fraser-Harris, M.D., M.Sc.; Fighting the Mississippi Floods; "Education Through the Air," by Edward Liveing, M.A. (of the Manchester broadcasting station).

THE ELECTRICIAN.—Annual Conference of the Electrical Contractors' Association, Scarborough; The International E.H.T. Conference at Paris.

THE FRUIT GROWER.—Psychology Applied to Fruit Picking; Mildewed Dutch Gooseberries (correspondence); Diseases of Raspberries and their Control.

GARDENING ILLUSTRATED.—Exhibiting Roses; The June Borders; Water Lilies; "A Garden of the Saints," by Mrs. Stanley Wrench; Fruits and Flowers at Vincent Square.

THE GAS WORLD.—Monthly Coking Section; Annual Meeting of the Association Technique de l'Industrie du Gaz; J. H. Brearley on "Art and Practice of Technical Discussion."

THE HARDWARE TRADE JOURNAL.—Prices of Building Materials; Light Castings Manufacturers and the Distributors; Galvanised Wire Netting: New Gross Price List; Ironmongers and Electrical Contracting.

THE TIMBER TRADES JOURNAL.—Forestry in Canada; Australian Timber Trade; Russia's Export Outlook; Qualities of Woodworking Machinery.